ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

FINAL REPORT

FY93 LIMITED ENERGY STUDY

MILAN ARMY AMMUNITION PLANT
MILAN, TENNESSEE

CONTRACT NO. DACA01-94-D-0007

Prepared For:

Mobile District
U.S. Army Corps of Engineers
Mobile, Alabama

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I. Executive Summary

Introduction

In May 1994, Affiliated Engineers SE, Inc. (AESE) was retained by the Mobile District U.S. Army Corps of Engineers to perform a Limited Energy Study for Milan Army Ammunition Plant, Tennessee.

The field survey of existing conditions was completed in June 1994. The results of this field survey were subsequently tabulated and used to generate single line building drawings on Autocad. Several alternative lighting models were examined to determine if a more efficient lighting system could be installed that would produce the same or better lumen levels at these facilities while reducing the buildings' electrical lighting energy consumption.

This report summarizes the results obtained from this field investigation and the analysis of various alternative Energy Conservation Opportunities (ECO's). To develop the field data into various alternative ECO concepts or models, we utilized an "Excel" spreadsheet to tabulate and compare energy consumption, light output, installation and operating costs for various ECO's at these buildings.

These ECO's were then analyzed for suitability for the Energy Conservation Investment Program (ECIP) using the government's software package called Life Cycle Cost in Design (LCCID).

Scope of Work

The Scope of Work developed by the U.S. Army Corps of Engineers gave the following tasks:

1. Perform a field survey to gather information on existing lighting conditions.
2. Provide a list of suggested ECO's.
3. Analyze ECO's using the LCCID program.
4. Perform savings to investment ratio (SIR) calculation.
5. Rank ECO's per SIR's.

6. Provide information on study assumptions and document equations used in calculations.

7. Describe any proposed lighting products with manufacturer's catalog cuts or drawings.

8. Perform Life Cycle Cost Analysis.

9. Perform Synergism Analysis.

10. Calculate Energy/Cost Ratios.

11. Calculate Benefit Cost Ratios.

12. Provide documentation in the form of Project Development Brochures (PDB's) and DD Form 1391.

13. Provide recommendations for implementation of ECO's into projects by ECIP priority.

14. Prepare a report to document the work performed, results, and recommendations.

Buildings examined for Energy Conservation Opportunities were as follows:

A - 2, 3, 4, 6

B - 10, 12, 14, 18

D - 3, 10, 16, 41

H - 81, 111, 115

O - 1, 3, 4

X - 8, 14, 18, 26, 27, 41

Description of ECO's

Existing lighting consisted of mostly incandescents, with a mixture of two and three lamp fluorescent used as task lighting over desks and production belts. A few buildings were distinct. One building was already upgraded with high pressure sodium lighting (X-41), and another with mercury vapor lighting (A-2).

We examined five alternate ECO's models. Before we could start the analysis, we adapted models of the existing systems to fully functioning systems and proposed systems for an equitable comparison. Existing lighting conditions were so poor due to broken fixtures and burnt out light bulbs that we were unable to obtain many footcandle readings without taking them directly under a working light fixture. Thus we started this analysis by theoretically replacing the existing light bulbs, burnt out ballasts, and broken fixtures. We were also then able to introduce a regular relamping schedule into our analysis.

The baseline of this analysis is defined as Alternate 1 as follows:

ALTERNATE 1

Baseline theoretically upgrades the existing fixtures by:

a) Relamping of all fixtures.

b) Replacing failed ballasts in HID and fluorescent fixtures.

c) Replacing broken fixtures to restore Class II, Division 1 rating.

d) Augmenting existing building (C) and belt (B) lighting with a 40 percent increase to attain adequate lighting.

The quantity of light fixtures at ramps (R) and loading areas (L) are assumed adequate and are not increased in quantity. Also individual fluorescents used as task lighting over desks or used as office lighting are not increased in quantity.

Energy Conservation Opportunities are defined as alternates 2 through 6 as follows:

ALTERNATE 2

Replaces the existing fixtures by:

a) Replacing 100 watt, 200 watt, and 300 watt building (C) lighting, ramp (R) lighting, and loading (L) lighting with 70 watt metal halide fixtures.

b) Replacing all belt (B) lighting (both incandescents and two and three lamp T12 fluorescents) with new two lamp 32 watt T8 fluorescent fixtures.

ALTERNATE 3

Replaces the existing fixtures by:

a) Replacing 100 watt, 200 watt, and 300 watt building (C) lighting, ramp (R) lighting, and loading (L) lighting with high pressure sodium lighting. The building (C) and loading (L) lighting are to be 70 watt HPS; the ramp (R) lights are to be 50 watt HPS. Belt (B) lighting is to be changed to two lamp 32 watt T8 fluorescents, as in alternate 2 above.

ALTERNATE 4

Replaces the existing fixtures similar to Alternate 2 with 70 watt metal halides; however, we try to economize by reusing the existing two and three lamp T12 fluorescents. This approach minimizes initial project cost by eliminating replacement of these fluorescents. New belt (B) fluorescents required to be added will be energy savings 3 lamp 34 watt/T12 type with energy savings magnetic ballasts.

ALTERNATE 5

Replaces the existing fixtures similar to Alternate 3 with 70 watt high pressure sodium fixtures at building (C) and loading (L) locations, and with 50 watt high pressure sodium fixtures at ramp (R) locations. As in Alternate 4 above, we also try to economize by reusing the existing two and three lamp T12 fluorescents. New belt (B) fluorescents will be energy savings 3 lamp 34 watt T12 type with energy savings magnetic ballasts.

ALTERNATE 6

Replaces the existing fixtures at Building (C), Ramp (R), and loading (L) lights with 50 watt HPS fixtures. All fluorescents at building (C) and belt (B) lighting will be replaced with 2 lamp T8 type fixtures with magnetic ballasts, as in Alternate 2 above.

When existing building lighting is either mercury vapor or high pressure sodium, the fixtures are to be changed to the specified alternate type or left alone, respectively.

Findings, Analysis, and Results

Our analysis examines the yearly electrical energy consumption and demand charges, the initial installation costs, and the associated operating costs of these alternates as compared to the fully functioning existing system.

Results and recommendations from this analysis are per the attached Tables 1 through 4.

In general, this ECO analysis resulted in multiple feasible options at a particular building which would qualify for ECIP funding. Unfortunately the most successful alternates for each ECO were not a single consistent alternate across the board. The resolution was to select the alternates with the highest SIR possible, yet to be consistent with the types of lighting changeouts so as to minimize the variety of lamps required to be warehoused at the facility.

We were also able to correlate the results such that the recommended projects packaged together were fairly consistent with type of lamp changeout, if not with lamp wattage.

Table 1 provides the results for buildings with feasible ECO alternatives with SIR > 1.25 and with payback < 10 years. We recommend the following packages as a result of synergism analysis, LCCID analysis and the Excel spreadsheet with footcandle analysis and cost analysis:

A-4	Alternate 4	$	154,789.00
A-6	Alternate 4	$	3,686.00
B-12	Alternate 4	$	32,834.00
B-14	Alternate 4	$	250,435.00
B-18	Alternate 4	$	211,339.00
D-3	Alternate 4	$	184,128.00
D-10	Alternate 4	$	214,182.00
D-16	Alternate 4	$	25,793.00
D-41	Alternate 4	$	82,973.00
H-81	Alternate 4	$	44,355.00
H-115	Alternate 4	$	74,407.00
X-14	Alternate 4	$	186,159.00
X-18	Alternate 4	$	127,345.00
X-26	Alternate 4	$	11,940.00
X-27	Alternate 4	$	56,600.00
X-41	Alternate 4	$	165,233.00

Table 2 provides the results for buildings with feasible ECO alternatives with SIR > 1.25 but with payback > 10 years and < 15 years. We recommend the following:

B-10	Alternate 4	$	10,440.00
O-1	Alternate 4	$	21,143.00
O-4	Alternate 4	$	33,760.00

These projects are combined with other feasible ECO alternatives in our synergism analysis to produce an overall project with SIR > 1.25 and payback < 10 years.

Table 2 also provides the results for buildings with unfeasible ECO alternatives with 1.0 < SIR < 1.25 and simple payback > 10 years. The following buildings and alternates fit into this category:

A-3	Alternate 4	$	90,932.00
H-111	Alternate 4	$	35,703.00
X-8	Alternate 4	$	78,118.00

These projects are not recommended due to required SIR > 1.25 for ECIP funding. They may be implemented however, with facility maintenance money as separate projects. They will provide good energy savings and have paybacks <15 years.

Table 3 provides the results for buildings with unfeasible ECO alternatives with SIR < 1.0 and payback >10 years. We suggest the following buildings and alternates for this category:

A-2 (Alternate 4)
O-3 (Alternate 4)

These projects are not recommended for ECIP funding since their SIR is below 1.0.

Finally, those projects recommended are combined into packages that meet SIR > 1.25, payback < 10 years, and cost > $300,000. Table 4 provides these results in detail. Briefly, the packages and their costs are as follows:

Package 1	$	544,820.00
Package 2	$	313,504.00
Package 3	$	398,310.00
Package 4	$	304,803.00
Package 5	$	330,101.00
TOTAL	**$**	**1,891,538.00**

First year dollar savings, calculated by LCCID, are $210,580. The non-recurring baseline differential cost is distributed through the 15 year economic life of each project. This gives a different number than if the entire savings was shown in the first year.

Annual energy savings for these packages are 1,232,000 kWH.

TABLE 1

FEASIBLE ECO'S RECOMMENDED/ECIP PROJECTS
PROJECT PRIORITY BY SAVINGS/INVESTMENT RATIO
SIR > 1.25, AND SIMPLE PAYBACK < 10 YEARS

PRIORITY NO.	BUILDING NO.	ALTERNATE NO.	SIR	TOTAL INVESTMENT	SIMPLE PAYBACK IN YEARS
1	B-12	6	2.53	$34,981	5.06
2	B-12	3	2.36	$35,770	5.46
3	B-12	5	2.36	$35,770	5.46
4	A-6	6	2.18	$4,037	5.97
5	B-12	2	2.13	$32,834	6.14
6	B-12	4	2.13	$32,834	6.14
7	X-26	5	2.11	$13,266	6.12
8	D-41	6	2.05	$91,590	6.21
9	D-16	6	2.01	$28,254	6.34
10	A-6	3	2.01	$4,129	6.51
11	A-6	5	2.01	$4,129	6.51
12	D-41	3	1.89	$93,640	6.75
13	D-41	5	1.89	$92,934	6.75
14	D-16	3	1.87	$28,785	6.84
15	D-16	5	1.87	$28,785	6.84
16	X-26	6	1.87	$15,887	6.87
17	X-26	4	1.87	$11,940	7.05
18	D-10	6	1.86	$239,673	6.88
19	X-41	6	1.81	$179,588	7.04
20	A-6	2	1.81	$3,686	7.43
21	A-6	4	1.81	$3,686	7.43
22	A-4	6	1.79	$175,641	7.14
23	D-10	3	1.77	$242,663	7.25
24	X-26	3	1.77	$16,101	7.27
25	D-10	5	1.77	$229,947	7.28
26	H-115	5	1.72	$82,805	7.39
27	A-4	3	1.72	$174,566	7.45
28	H-115	6	1.70	$89,265	7.48
29	X-18	5	1.69	$141,257	7.51
30	H-81	5	1.69	$49,275	7.54
31	X-41	3	1.69	$182,565	7.57
32	A-4	5	1.69	$171,402	7.59
33	B-10	6	1.68	$11,436	7.59
34	D-41	4	1.68	$82,973	7.78
35	X-41	5	1.67	$181,214	7.65
36	D-3	6	1.66	$196,091	7.69
37	X-27	5	1.66	$60,904	7.72
38	D-41	2	1.65	$83,965	7.92
39	X-18	6	1.63	$157,366	7.77
40	B-14	5	1.63	$268,119	7.87
41	D-10	4	1.62	$214,182	8.07
42	D-16	2	1.62	$25,793	8.08
43	D-16	4	1.62	$25,793	8.08
44	D-10	2	1.61	$227,918	8.06
45	X-14	6	1.60	$208,302	7.95
46	B-14	6	1.60	$303,272	7.98

TABLE 1

(CONT.)

FEASIBLE ECO'S RECOMMENDED/ECIP PROJECTS
PROJECT PRIORITY BY SAVINGS/INVESTMENT RATIO
SIR > 1.25, AND SIMPLE PAYBACK < 10 YEARS

PRIORITY NO.	BUILDING NO.	ALTERNATE NO.	SIR	TOTAL INVESTMENT	SIMPLE PAYBACK IN YEARS
47	H-81	6	1.59	$56,303	8.00
48	H-115	3	1.59	$90,631	8.02
49	D-3	3	1.59	$197,989	8.04
50	B-18	6	1.57	$244,582	8.12
51	O-1	5	1.55	$23,457	8.26
52	X-26	2	1.55	$14,774	8.48
53	B-18	5	1.53	$226,528	8.34
54	X-14	3	1.53	$210,414	8.34
55	B-14	3	1.53	$306,309	8.35
56	X-18	3	1.52	$159,736	8.34
57	X-27	6	1.52	$73,645	8.38
58	B-10	3	1.52	$11,695	8.42
59	B-10	5	1.52	$11,695	8.42
60	X-14	5	1.52	$199,110	8.44
61	O-4	5	1.51	$37,670	8.44
62	D-3	5	1.51	$195,869	8.50
63	H-81	3	1.50	$57,062	8.50
64	B-18	3	1.49	$247,057	8.52
65	X-27	4	1.48	$56,600	8.85
66	X-41	2	1.47	$167,055	8.87
67	B-14	4	1.46	$250,435	8.95
68	X-27	3	1.45	$74,374	8.80
69	X-41	4	1.45	$165,230	8.98
70	A-4	4	1.45	$154,789	9.13
71	X-8	6	1.44	$93,100	8.86
72	H-115	4	1.44	$74,407	9.03
73	X-8	5	1.43	$85,030	8.94
74	X-18	4	1.43	$127,345	9.10
75	D-3	2	1.42	$187,670	9.17
76	H-81	4	1.40	$44,355	9.33
77	A-4	2	1.38	$166,410	9.51
78	B-14	2	1.37	$288,624	9.46
79	X-14	2	1.36	$197,463	9.57
80	H-111	5	1.35	$39,590	9.36
81	X-8	3	1.35	$94,268	9.46
82	A-3	5	1.34	$108,042	9.51
83	B-18	4	1.34	$211,339	9.70
84	D-3	4	1.34	$184,128	9.76
85	X-14	4	1.34	$186,159	9.79
86	H-111	6	1.33	$46,109	9.53
87	H-115	2	1.32	$82,233	9.87
88	B-18	2	1.31	$232,816	9.86
89	O-4	6	1.29	$49,629	9.85

TABLE 2

FEASIBLE ECO'S NOT RECOMMENDED/NON-ECIP PROJECTS
PROJECT PRIORITY BY SAVINGS/INVESTMENT RATIO
SIR > 1, SIMPLE PAYBACK > 10 YEARS AND < 15 YEARS

PRIORITY NO.	BUILDING NO.	ALTERNATE NO.	SIR	TOTAL INVESTMENT	SIMPLE PAYBACK IN YEARS
1	X-18	2	1.28	$145,823	10.18
2	X-27	2	1.27	$71,137	10.23
3	O-4	4	1.26	$33,760	10.41
4	O-1	4	1.26	$21,143	10.44
5	B-10	2	1.26	$10,440	10.46
6	B-10	4	1.26	$10,440	10.46
7	O-1	6	1.25	$32,293	10.19
8	H-81	2	1.23	$52,142	10.57
9	A-2	5	1.22	$97,016	10.59
10	A-3	4	1.22	$90,932	10.70
11	X-8	4	1.20	$78,118	10.98
12	H-111	3	1.19	$46,655	10.59
13	O-4	3	1.18	$50,434	10.81
14	A-2	6	1.18	$109,706	10.90
15	O-3	5	1.17	$31,542	10.68
16	O-1	3	1.17	$32,673	10.92
17	O-3	6	1.15	$34,051	10.87
18	X-8	2	1.13	$87,808	11.61
19	O-3	3	1.08	$34,399	11.58
20	A-2	3	1.08	$111,255	11.95
21	A-3	6	1.03	$161,934	12.28
22	H-111	4	1.01	$35,703	12.88

TABLE 3

UNFEASIBLE ECO'S NOT RECOMMENDED
PROJECT PRIORITY BY SAVINGS/INVESTMENT RATIO
SIR < 1, AND SIMPLE PAYBACK > 10 YEARS

PRIORITY NO.	BUILDING NO.	ALTERNATE NO.	SIR	TOTAL INVESTMENT	SIMPLE PAYBACK IN YEARS
1	A-3	3	0.98	$163,134	12.91
2	O-4	2	0.96	$46,524	13.49
3	O-1	2	0.94	$30,360	13.94
4	H-111	2	0.89	$42,769	14.50
5	A-2	4	0.89	$87,264	15.39
6	O-3	4	0.79	$28,498	16.43
7	A-2	2	0.78	$101,502	17.44
8	A-3	2	0.77	$155,057	16.90
9	O-3	2	0.72	$31,355	17.90

TABLE 4

SYNERGISM ANALYSIS

PACKAGE NO. 1

BLDG NO.	ALT. NO.	FIRST YEAR DOLLAR SAVINGS	ANNUAL ENERGY SAVINGS (MWH)	TOTAL NET DISC. SAVINGS	TOTAL INVEST.	SIR
A-4	4	$16,957	107	$223,732	$154,789	1.45
A-6	4	$496	3	$6,666	$3,686	1.81
B-10	4	$998	8	$13,149	$10,440	1.26
B-12	4	$5,349	30	$70,079	$32,834	2.13
B-14	4	$27,971	152	$364,485	$250,435	1.46
D-16	4	$3,193	20	$41,763	$25,793	1.62
O-1	4	$2,026	14	$26,593	$21,143	1.26
O-4	4	$3,244	22	$42,434	$33,760	1.26
X-26	4	$1,694	10	$22,326	$11,940	1.87
TOTALS		$61,928	366	$811,227	$544,820	1.49

PACKAGE NO. 2

BLDG NO.	ALT. NO.	FIRST YEAR DOLLAR SAVINGS	ANNUAL ENERGY SAVINGS (MWH)	TOTAL NET DISC. SAVINGS	TOTAL INVEST.	SIR
X-14	4	$19,024	107	$248,801	$186,159	1.34
X-18	4	$13,999	92	$182,069	$127,345	1.43
TOTALS		$33,023	199	$430,870	$313,504	1.37

PACKAGE NO. 3

BLDG NO.	ALT. NO.	FIRST YEAR DOLLAR SAVINGS	ANNUAL ENERGY SAVINGS (MWH)	TOTAL NET DISC. SAVINGS	TOTAL INVEST.	SIR
D-3	4	$18,869	101	$246,764	$184,128	1.34
D-10	4	$26,534	142	$346,593	$214,182	1.62
TOTALS		$45,403	243	$593,357	$398,310	1.49

PACKAGE NO. 4

BLDG NO.	ALT. NO.	FIRST YEAR DOLLAR SAVINGS	ANNUAL ENERGY SAVINGS (MWH)	TOTAL NET DISC. SAVINGS	TOTAL INVEST.	SIR
D-41	4	$10,659	68	$139,286	$82,973	1.68
X-27	4	$6,393	35	$83,587	$56,600	1.48
X-41	4	$18,397	112	$240,051	$165,230	1.45
TOTALS		$35,449	215	$462,924	$304,803	1.52

PACKAGE NO. 5

BLDG NO.	ALT. NO.	FIRST YEAR DOLLAR SAVINGS	ANNUAL ENERGY SAVINGS (MWH)	TOTAL NET DISC. SAVINGS	TOTAL INVEST.	SIR
B-18	4	$21,781	122	$283,386	$211,339	1.34
H-81	4	$4,755	32	$62,081	$44,355	1.40
H-115	4	$8,241	55	$107,402	$74,407	1.44
TOTALS		$34,777	209	$452,869	$330,101	1.37

ENERGY UNIT CONVERSION

- $\frac{\text{kWh x 3413}}{1{,}000} = \text{MBTU}$

- Approximate energy savings at the Milan Army Ammunition Plant is 1,232,000 kWh per year.

- $\frac{\text{1,232,000 x 3413}}{1{,}000} = \text{MBTU}$

  or

  MBTU = 4,204,816 per year

  Conversion - $\frac{\text{kWh}}{\text{Yr.}}$ to $\frac{\text{MBTU}}{\text{Yr.}}$

II. Detailed Narrative

Problem Statement

The buildings and associated lighting systems are approximately 40 to 50 years old. General area lighting for these buildings is mostly accomplished with incandescent fixtures. A few buildings had either mercury vapor or high pressure sodium lighting. In all buildings it was common for the lighting systems to be in a state of disrepair. A large quantity of lamps were burnt out, and there were also several fixtures that needed to be replaced due to age, missing parts, or being nonfunctional. The engineers representing the facilities (the Owner) are aware of the poor conditions of the existing lighting. The Owner is interested in replacing the existing lighting system with a more energy efficient lighting system, provided it meets the U.S. Government's Standards for ECIP funding based upon requirements for paybacks, savings to investment ratio, etc.

Lamp Characteristics

The ratio of usable light output versus the amount of energy consumed by a lamp is defined as lumens per watt (LPW). Incandescent lamps have the lowest LPW of all lamps manufactured. Fluorescent lamps are in the middle category while HID lamps produce the highest LPW (see Figure 1). Because the LPW of incandescent lamps are very low, it is always possible to replace them with fluorescent or HID lamps and maintain light levels while greatly reducing energy consumption.

Incandescent lamps are resistive devices. When voltage is applied, the filament heats until it begins to glow, giving off visible light. Fluorescent lamps have a long tube filled with inert gas and electrodes at each end. When current is applied, the electrons in the gas are excited and strike a phosphor coating inside the tube which produces visible light. Because the tube is filled with gas and has a low resistance, a ballast must be used to limit current between the electrodes. HID lamps function similarly to fluorescent lamps, except that the arc tube is much smaller. High current is applied, creating an arc in the tube. This arc provides all the visible light from the HID lamp, rather than relying on a phosphor coating. Like the fluorescent lamp, HID lamps require a current limiting ballast (see Figure 2).

AVERAGE LUMENS PER WATT

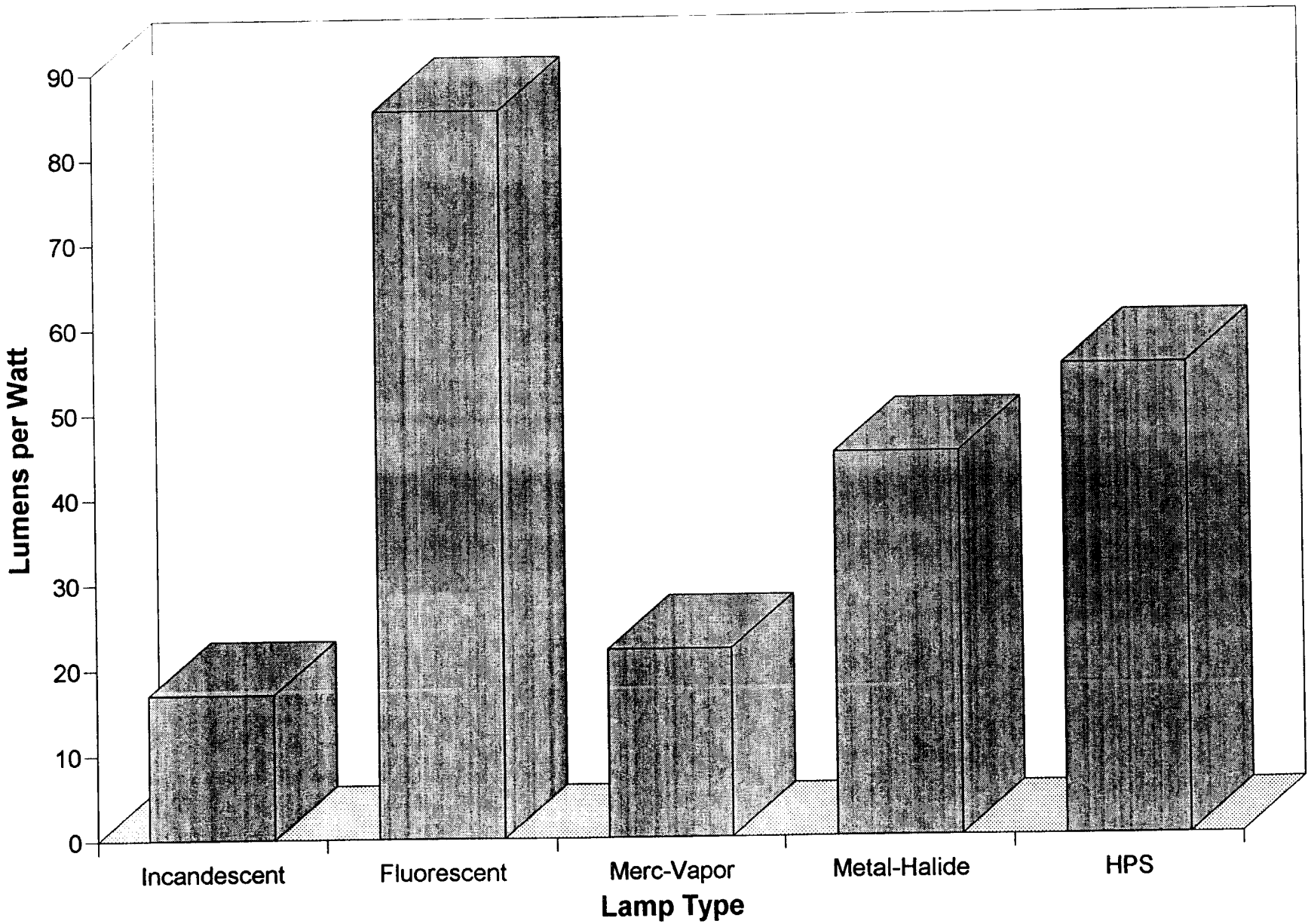
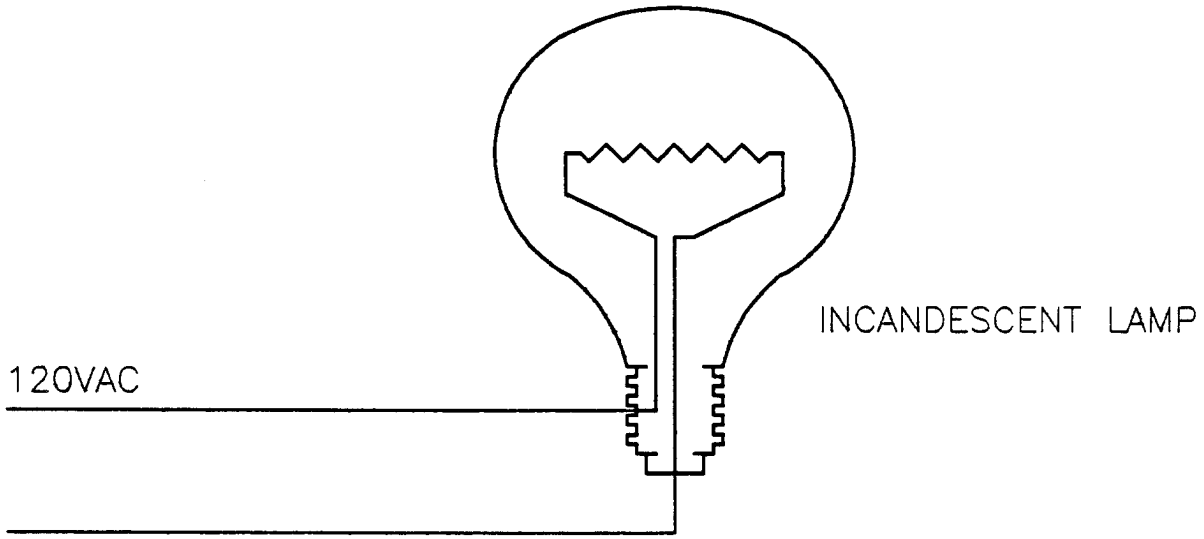
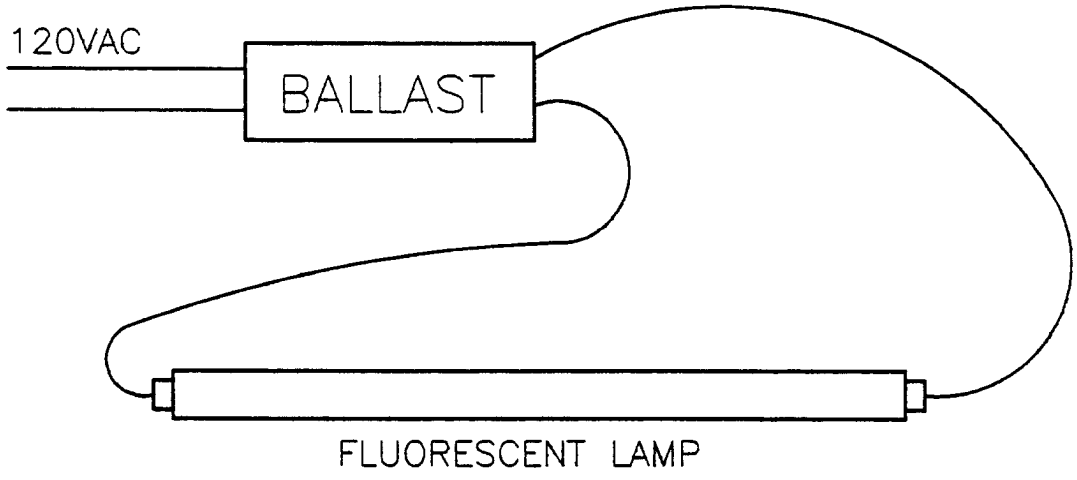


FIGURE 1

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LAMP THEORY OF OPERATION





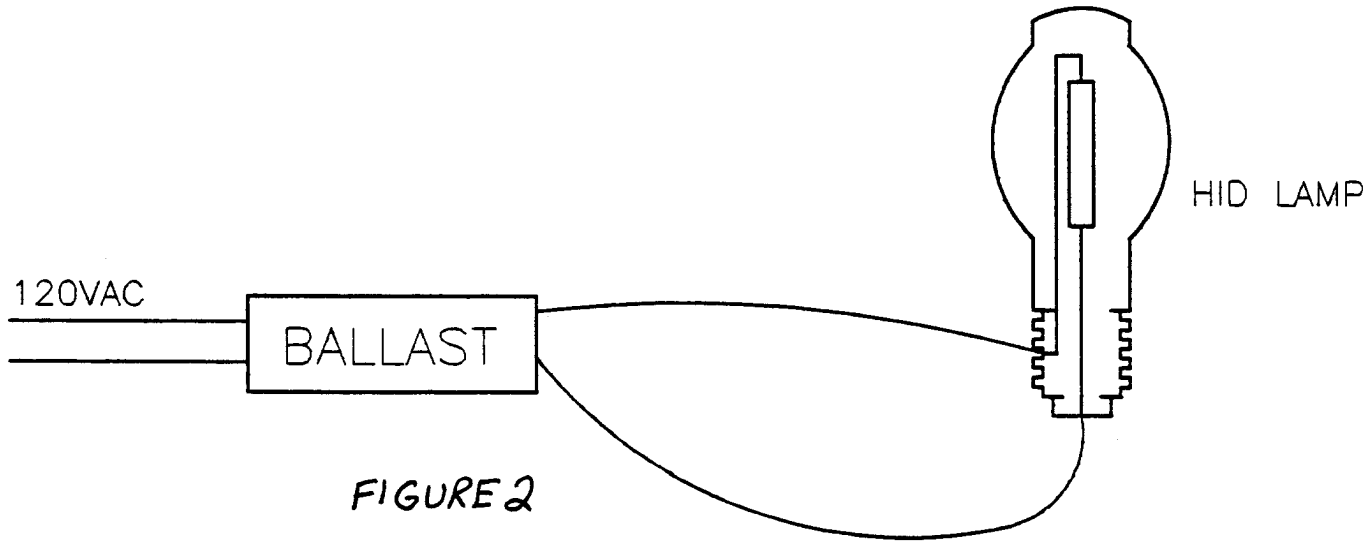


FIGURE 2

Rated life of a lamp is defined as the time, in hours, at which 50% of a large group of lamps have burned out. The existing incandescent lamps have a rated life of 1500 hours. The 70W metal-halides are rated at 7,500 hours. T8 and T12 fluorescents have a rated life of 20,000 hours, while mercury vapor and high pressure sodium (HPS) lamps are rated at 24,000 hours. Because they last many times longer than incandescents, fluorescent and HID lamps require far less maintenance time (see Figure 3).

The lumen output of all lamps drops over rated life. As the filament of an incandescent lamp is heated, it slowly degrades and burns away. The on/off cycling of fluorescent lamps causes the phosphor coating to degrade. The metals in HID lamps are slowly used up during normal operation. These conditions will cause the light output of lamps to decrease over time. Generally, HPS and fluorescent lamps have the highest lumen maintenance, while the lumen output of incandescent lamps drops the fastest (see Figure 4).

Study Approach

Due to the poor conditions of the existing lighting, we began our analysis by theoretically upgrading the existing system. This theoretical upgrade is necessary to equitably compare the existing system to the alternate systems for a "level playing field". As a result of this upgrade, all of the ECO alternatives examined were referenced to the existing system model, Alternate 1, with similar quality lighting at the beginning of a new lamp life cycle. We also introduced a group relamping and cleaning schedule in our analysis. All fixtures are cleaned on three year intervals to minimize light loss due to dirt accumulation. Lamps are changed out at 70 percent of rated life. Analysis proves that performing a group relamp at this time is more cost effective than waiting until 100 percent rated life. Relamping at 70 percent raises light levels back to design levels before they have noticeably depreciated. Furthermore, more money is spent spot relamping burned out lamps that performing a group relamp at 70 percent rated life.

Every type of lamp receives a Color Rendering Index (CRI) number, which measures how natural color appears under specific lighting. Incandescent lamps have perfect color rendering and are assigned a CRI of 100. A lower CRI indicates that colors will not be reproduced as well as under incandescent lighting. In general, fluorescent lights have a CRI between 70 - 90 and HID lighting has a CRI of 60 and below. Please note that CRI is not related to the amount of light produced by a particular lamp (see Figure 5).

AVERAGE RATED LIFE

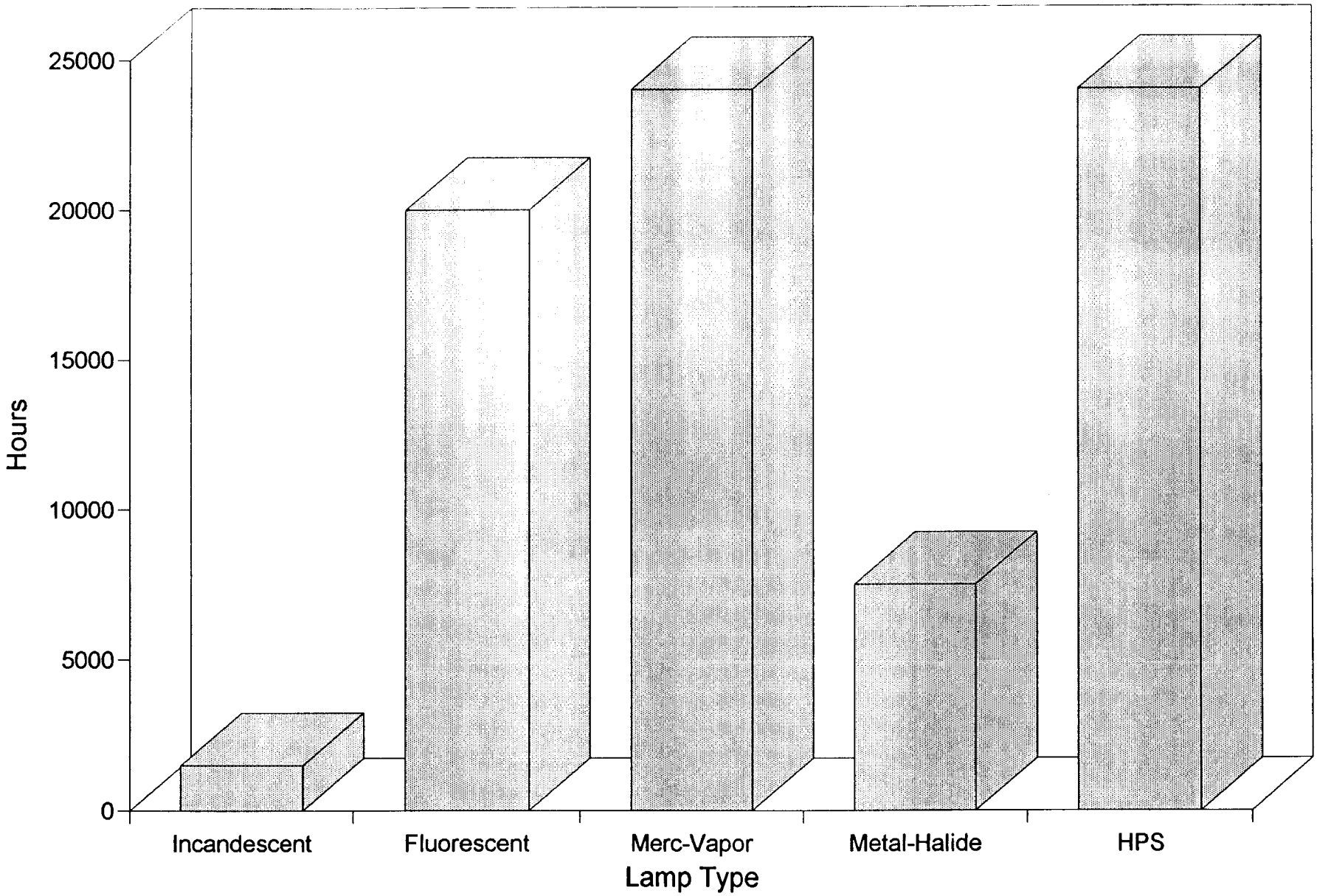
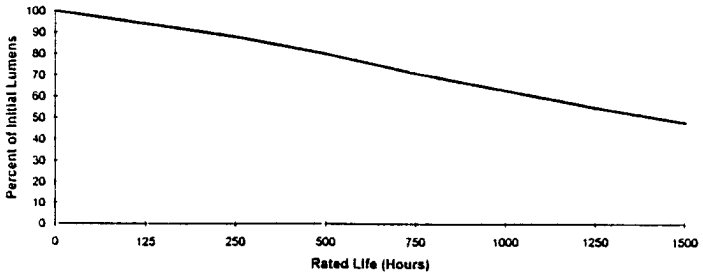


FIGURE 3

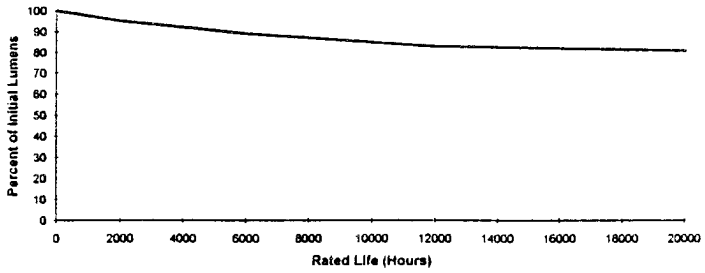
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LUMEN OUTPUT OVER RATED LIFE

INCANDESCENT



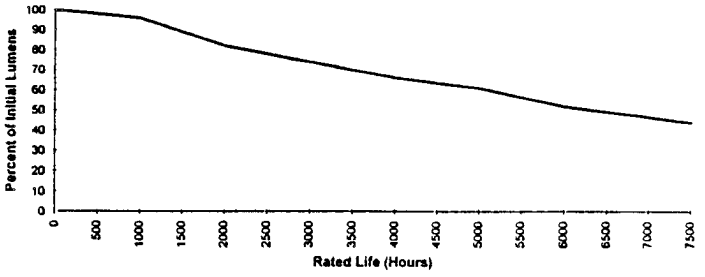
FLUORESCENT



MERC-VAPOR



METAL-HALIDE



HPS

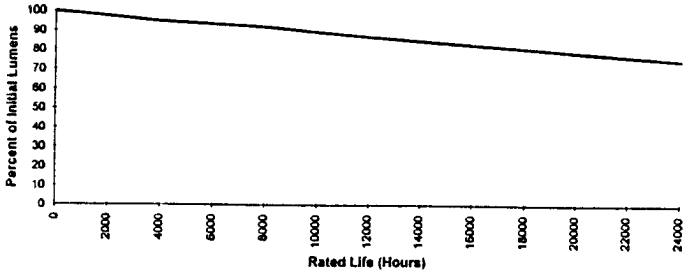
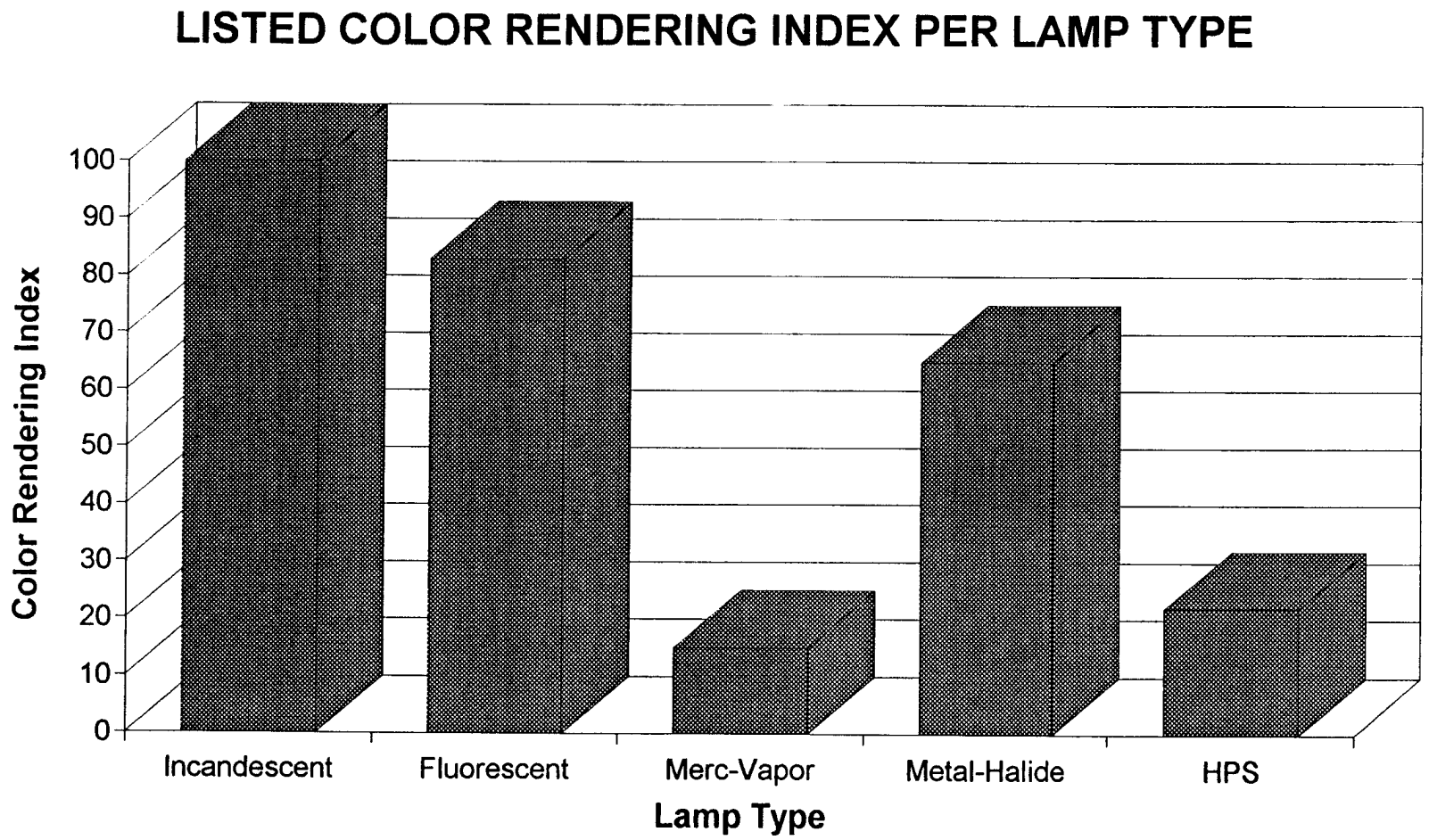


FIGURE 4



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FIGURE 5

Alternates studied as energy conservation opportunities are as follows:

Alternate 1--As mentioned above, Alternate 1 repairs the existing lighting systems by relamping all fixtures, replacing all ballasts which have failed, and replacing broken fixtures. This alternate is the minimum work that must be done to the facilities to ensure a condition of adequate lighting per Illuminating Engineering Society (IES) handbook. An excerpt of the IES handbook is included in the Miscellaneous Data section of this report (Section IV). Recommendations on the upgrade and on the various alternative concepts are based upon lighting levels suggested in this handbook, and are as follows:

Ramp (R)	=	Category A, 2 - 5 footcandles
Building (C)	=	Category B and C, 5 - 20 footcandles
Loading (L)	=	Category B and C, 5 - 20 footcandles
Belt (B)	=	Category D, 20 - 50 footcandles

The existing fixtures are mostly incandescent. We examined adding 40 percent more Building (C) fixtures to augment the existing conditions. We chose to add 40 percent for the following reasons:

The 200 watt incandescents (I) have a 3400 lumen rating and CRI 100; the 50 watt high pressure sodium (HPS) have a 3,600 lumen rating and CRI 22 and the 70 watt metal halides (MH) have a 4,000 lumen rating and CRI 65. The lumen output from the incandescents approximately equal that of the HPS and MH fixtures with a 20 percent increase in fixture count. However, due to the nature of incandescent fixtures, they have an irregular lamp burn out. We therefore added another 20 percent of fixtures to compensate for this burn out. This increase also helps to compensate for lumen depreciation of the lamps. Should this last 20 percent be found excessive, it can be removed from the study's results by increasing the time for payback and decreasing the SIR by at least 20 percent.

Finally, note that this increase was only in general building (C) lighting as mentioned above. Task lighting, such as loading (L) and belt (B) lighting, already have a sufficient quantity of lighting to illuminate the work involved. Ramp (R) lighting was also not increased because the IES footcandles requirements for these areas are minimal (see above).

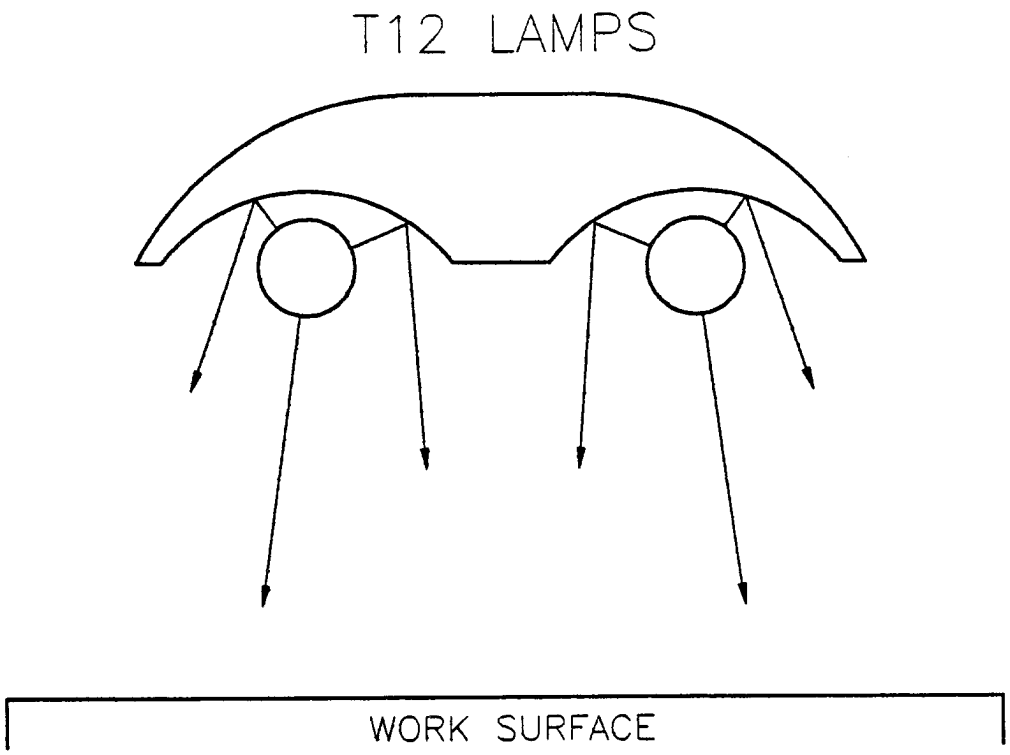
Approach to Alternate Lighting Concepts

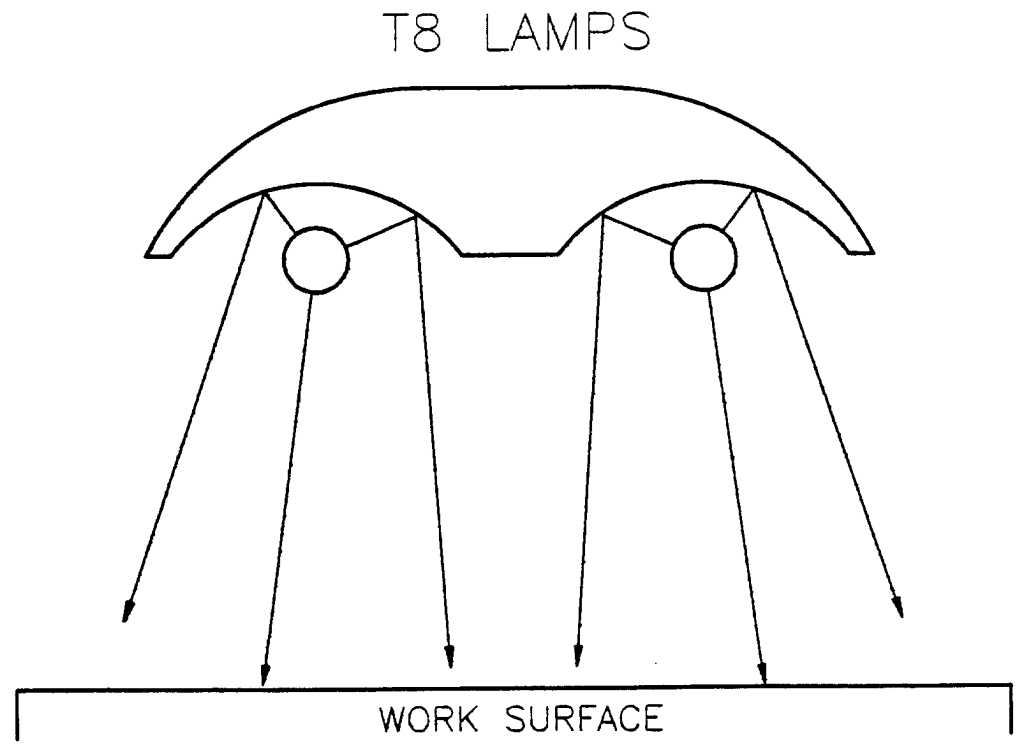
Because incandescent lighting is inefficient, energy consumption due to lighting can be decreased by changing these fixtures to more efficient High Intensity Discharge (HID) lighting. We eliminated the use of 100 watt HID fixtures since their light output was excessive with a one for one changeout. We examined using fewer quantities of higher wattage fixtures to obtain reasonable and useful footcandle levels. This concept was quickly eliminated due to the nature of the existing facilities. The existing facilities are long and narrow with many cubicles. The resulting high wattage would not produce an even distribution of light (i.e., would result in poor lighting quality). In addition the roof/ceiling height of this facility is too low to obtain any advantage to going to higher wattage (100 watt HID's and larger) fixtures. Lighting systems using greater than 250 watt HID's may also require a re-wiring costs due to increased amperage requirements exceeding the capacity of the existing wiring. It was our intention to minimize capital outlay by using the existing wiring system and changing out fixtures in place, or at least nearby (within 10 feet) by extending the existing conduit and wire to achieve a more uniform lighting layout in the room. Thus the high wattage concept was not pursued, and is not further discussed.

Alternate 2--With Alternate No. 2, the majority of the building's fixtures (C, R, and L) are changed to a 70 watt metal halide fixture with CRI 65. Metal halide lamps produce a white light with good color rendering and will provide improved lighting quantity and quality over existing conditions. This lighting will be comparable to the improved lighting from the upgraded existing conditions (Alternate 1). Personnel should have no trouble adjusting to the lighting due to the white light color. With this alternate, belt (B) lighting is replaced with the more efficient T8 fluorescent lamps. These lamps require lower input currents to produce the same lumen output as T12 lamps, making them more efficient. T8 lamps are manufactured with a smaller diameter and better color rendering than T12 lamps. The smaller diameter of the T8 allows more light to be reflected from the fixture, resulting in further increased light levels (see Figure 6). These T8 fluorescent fixtures replace both the incandescents and the T12 fluorescent fixtures presently over the belts (B). The quantity of replacement fluorescent fixtures at this interim submittal, however, is on a one for one basis. The fixture count will be lowered on the next submittal to reflect the maximum quantity that can be installed due to physical constraints of placing 1 x 4 fixtures in a row over the belts. This decrease in fixture count over the belts (B) will improve the payback of the next (final) submittal. Because the lumen output for these T8 lamps are higher than the T12 lamps, and because there is a higher coefficient of utilization associated with these fixtures, we only used the 2 lamp variety

FIGURE 6

T12 VS T8 LAMPS





of the T8 fixtures. The higher coefficient of utilization results in a more useable light output from these fixtures.

Alternate 3--With Alternate 3, the majority of the building's fixtures (C, R, and L) are changed to high pressure sodium lighting. The building (C) and loading (L) lights are changed to 70 watt high pressure sodium with CRI 22 to obtain the best lighting levels possible. Requirements for ramp (R) lighting are not as stringent, therefore, the ramp (R) fixtures are changed to 50 watt HPS to give us the maximum energy savings possible. The belt (B) lighting is changed to the T8 fluorescent fixtures to provide the maximum energy savings possible. The quantity of fluorescents will be adjusted for the next submittal, as in Alternate No. 2.

One important aspect associated with the change to HPS lighting will be worker acceptance of the yellow color for general building lighting as is the characteristic of this type HID lamp. This adjustment is non-quantifiable. Either they will like the improved lighting or they will feel initially uncomfortable with the color. Over time they will adjust. HPS lighting is used exclusively on the assembly line of GM car manufacturing plants in Detroit. The workers there have adapted to these conditions. One bonus for these projects is that the belt (B) and building (C) task lighting will continue to be a white light from the T8 fluorescents. This aspect should make acceptance of the new lighting system a bit easier. Since most people stay at their station during production runs, they will have white lighting over their assigned tasks anyway. One other aspect of this change that cannot be quantified, however, is worker irritation due to the contrast caused by being at the "border" between task (white) and building (yellow) lighting. This contrast may be very uncomfortable to some workers. Discomfort relating to this "border" zone cannot be predicted.

Alternate 4--With Alternate 4, the majority of the building's fixtures (C, R, and L) are changed to 70 watt metal halide just as they were in Alternate 2. This approach gives us the white building lighting with energy savings attained by changing out incandescent lighting to HID lighting. This approach also saves the most capital outlay possible over the belt (B) by reusing existing fluorescents. Any incandescents over the belt (B) will be changed to 3 lamp T12 fluorescents with energy savings ballasts. These T12 lamps are 34 watts and would match the existing to remain. By staying with the T-12 lamps there would be no hardship caused in the warehousing and change out of different types of fluorescents. As with the

other alternates, the number of fluorescents over the belts will have to be adjusted prior to final results.

Alternate 5--Alternate 5 is a combination of Alternates 3 and 4. This alternate tries to maximize the amount of building lighting energy savings by going to the 70 and 50 watt high pressure sodium lighting (Alternate 3); and it tries to minimize capital outlay by reusing existing T12 fluorescents (Alternate 4). The 70 watt fixtures are to be used at building (C) and loading (L) locations. The 50 watt fixtures are to be used at the ramp (R) locations. New fluorescents over belts (B) are to match existing 3 lamp T12 type with energy savings ballasts.

Alternate 6--Alternate 6 is designed to give the maximum energy savings possible over the baseline. This alternate replaces the building fixtures (C, R, and L) with 50 watt HPS lighting. The fluorescent fixtures (B and C) are replaced with the more efficient T8, 2 lamp type.

Fire Detection System Discussion

Part of the facility fire protection system includes the use of a Det-Tronics type C7050 ultraviolet fire detector. In case of a fire, this device would sense ultraviolet radiation and set off a deluge system. There was some concern that the fluorescent and HID systems recommended could emit UV radiation in the range detected by the Det-Tronics device and trigger the deluge system. We have studied this and learned that, in normal operation, the level of UV radiation from HID and fluorescent lighting is very low. Furthermore, the UV detector only monitors from 185nm to 245nm, while the recommended lights only emit UV down to 320nm. In the event of an outer shell breakage, metal-halide and mercury vapor lights would emit high levels of UV radiation. Because the lights are housed in an explosion proof fixture, we believe that any detectable radiation would be absorbed by the fixture lens housing. However, we recommend performing a controlled test of fluorescent and HID lighting to verify product compatibility with the existing fire detection system. Further technical information on lamp radiation and the UV detector can be found in the Miscellaneous Data section.

Fixture Backup Data

In our analysis we use abbreviations to describe the various lighting fixtures. Associated with these fixtures are specific types of lamps and ballasts. For our study we selected Crouse-Hinds fixtures, General Electric Lamps and certain GE and Advance ballasts with specific efficacy characteristics.

Table 5 below shows the fixture types, associated lamps, and ballasts and the particular manufacturers of the items studied. This information is included to allow verification of results. While other manufacturers produce similar items with equivalent efficacy, still other manufacturers produce items with less efficacy. Therefore, the documentation of this information is important to reproduce these results.

TABLE 5. FIXTURE MANUFACTURER & COMPONENT CATALOG NUMBERS

Fixture Designation	Fixture Manufacturer & Catalog No.	Lamp Manufacturer & Catalog No.	Ballast Manufacturer & Catalog No.
I100	C.H. EVA2151	G.E. 100 A23/VS 24 PK	No Ballast Required
I200	C.H. EVA 2301	G.E. 200 PS 30/24	No Ballast Required
I300	None	G.E. 300M/99	No Ballast Required
MV10	C.H. DMVC2A100GP	G.E. HR100A38	G.E. - Regulator Ballast (CWI)
MH70	C.H. DMVM2A070GP	G.E. MXR70/U/MED	G.E. - Reactor Type (HPF-LAG)
HP50	C.H. VMVS2A050GP	G.E. LU50	G.E. - Regulator (LAG)
HP70	C.H. VMVS2A070GP	G.E. LU70	G.E. - Regulator (LAG)
F212	C.H. FVN4240TG	G.E. F40SPX30/RS/WM/30PK	Advance - RQM2S40TP
F312	C.H. FVN4340TG	G.E. F40SPX30/RS/WM/30PK	Advance - RQM2S40TP Advance - HM140TP
F208	C.H. FVNX2YZTG	G.E. F32T8SPX30	Advance - REL2P32RHTP

Fixture abbreviations for the fixture designations above are defined as follows:

I100 - Incandescent, 100 watt
I200 - Incandescent, 200 watt
I300 - Incandescent, 300 watt
MV10 - Mercury Vapor, 100 watt
MH70 - Metal Halide, 70 watt
HP50 - High Pressure Sodium, 50 watt
HP70 - High Pressure Sodium, 70 watt
F212 - Fluorescent, 2 - 34 watt/T12 lamps
F312 - Fluorescent, 3 - 34 watt/T12 lamps
F208 - Fluorescent, 2 - 32 watt/T8 lamps

Because the working environment at the Milan facility includes the presence of combustible dusts, it is classified as a hazardous location according to National Electric Code (NEC) article 500 (see Figure 7). The buildings fall under the Class II (Group E, F, and G), Division 1 category and all light fixtures must be rated for use in this type of environment. All the

NATIONAL ELECTRIC CODE
ARTICLE 500 - HAZARDOUS (CLASSIFIED) LOCATIONS

500-3 (b). Class II Group Classifications.
(1) Group E: Atmospheres containing combustible metal dusts, including aluminum, magnesium, and their commercial alloys, or other combustible dusts whose particle size, abrasiveness, and conductivity present similar hazards in the use of electrical equipment.

(2) Group F: Atmospheres containing combustible carbonaceous dusts, including carbon black, charcoal, coal, or coke dusts that have more than 8 percent total entrapped volatiles, or dusts that have been sensitized by other materials so that they present an explosion hazard.

(3) Group G: Atmospheres containing combustible dusts not included in group E or F, including flour, grain, wood, plastic, and chemicals.

500-6 (a). Class II, Division 1.
A Class II, Division 1 location is a location (1) in which combustible dust is in the air under normal operating conditions in quantities sufficient to produce explosive or ignitable mixtures; or (2) where mechanical failure or abnormal operation of machinery or equipment might cause such explosive or ignitable mixtures to be produced, and might also provide a source of ignition through simultaneous failure of electrical equipment, operation of protection devices, or from other causes; or (3) in which combustible dusts of an electrically conductive nature may be present in hazardous quantities.

500-6 (b). Class II, Division 2.
A Class II, Division 2 location is a location where combustible dust is not normally in the air in quantities sufficient to produce explosive or ignitable mixtures, and dust accumulations are normally insufficient to interfere with the normal operation of electrical equipment or other apparatus, but combustible dust may be in suspension in the air as a result of infrequent malfunctioning of handling or processing equipment and where combustible dust accumulations on, in, or in the vicinity of the electrical equipment may be sufficient to interfere with the safe dissipation of heat from electrical equipment or may be ignitable by abnormal operation or failure of electrical equipment.

FIGURE 7

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Crouse-Hinds fixtures shown above are explosion proof and rated for Class II (Group E, F, and G), Division 1 use.

Detailed information concerning the above fixtures, lamps, and ballasts can be examined in the attached manufacturer's data/catalog cut sheets. These cut sheets are included at the back of this report, Section III.

Energy Consumption Calculations

Presented below is a description of general concepts and approach utilized in formulating energy consumption calculations for the Excel Spreadsheet. These concepts are presented here to give the reader a brief overview of the major points only. A more detailed explanation of the assumptions, derivations, and use of these calculations is presented in Appendix I.

Data obtained from the specific manufacturers mentioned above was used in the development of calculations for energy consumption and light output. Data from other manufacturers was also examined and used to help select the specified items. The ballast and lamp manufacturer selections were based upon other manufacturers' ability to provide similar products. The selection of the fixture manufacturer was limited to those with products suitable for use at the existing facility. We selected the manufacturer presently used at these facilities.

While developing energy costs for this study, we determined the energy consumed was the sum of that consumed by the fixture's ballasts and lamps. This loading data was obtained from the manufacturer's information and is indicated on the catalog cuts referenced above. A summary is provided in Table 6 below:

TABLE 6. FIXTURE LOAD DATA

Fixture Designation	Nominal Watts	Actual Watts	Amps	Volts	VA	pf
I100	100	100	0.83	120	100	1.0
I200	200	200	1.67	120	200	1.0
I300	300	300	2.50	120	300	1.0
MV10	100	127	1.1	120	132	0.9624
MH70	70	89	0.8	120	96	0.9271

HP50	50	58	0.5	120	60	0.9667
HP70	70	99	0.9	120	108	0.9167
F212	68	82	0.72	120	86.4	0.9491
F312	102	132	1.16	120	139.2	0.9483
F208	64	62	0.56	120	67.2	0.9226

Calculation of other information on the above table is as follows:

- Actual Watts = Lamp Watts + Ballast Watts
- VA = Volts x Amps
- pf, power factor = Watts ÷ Volt-Amperes

Information from Table 6 was used to develop energy consumption data based upon the number of hours the light fixtures are turned on. The Milan Army Ammunition Plant works on a 4 day work week, 10 hours a day for production. They take a 1 hour lunch. AESE observed that shift foremen would arrive early and turn on the lights. Also, AESE observed the foremen were the last to leave and turned off the lights. We therefore assume an additional 1/2 hour of light in the morning and an additional 1/2 hour of light in the evening. Total daily fixture "operating duration" can thus be calculated:

Early AM	1/2 hour
Morning to Lunch	5 hours
Lunch	1 hour
Lunch to Evening	5 hours
Late PM	+ 1/2 hour
Daily Total "Operating Duration"	12 hours

From the daily total "operating duration" we calculated weekly "operation duration" as follows:

Weekly "Operating Duration"	=	Daily "Operation Duration" x 4 days
Weekly Time	=	12 x 4 = 48 hours

Please note that the above analysis assumes a weekly "operating duration" with only one shift. We examined electrical energy consumption for the various production yards for the past 4 years. (See table of Facility Energy Consumption in Appendix). We looked for a recognizable change in load which occurred on a monthly basis. For example, if the power bill at one month was **X**, and the power consumption at another month was 2 **X**, then we

could assume that two shifts worked that other month. While a significant monthly variation at each production facility exists, there is not enough to be recognizable as a second shift for even one whole month. We therefore assumed that second shifts are short term and that an average of only one shift was working for 52 weeks per year. We acknowledge that the plant may shut down over Christmas or the 4th of July. We also acknowledge that occasionally double shifts do occur. Therefore, the assumption of 52 work weeks per year should average out the "down" and the "double shift" times. Power bills over the past 4 years seem to corroborate this assumption. Therefore, a yearly average of fixture "operating duration" was calculated as follows:

Weekly "operating duration" x wks/yr = "operating duration"/yr
48 hrs/wk x 52 wks/year = 2,496 hrs/yr

This yearly "operating duration" is utilized in Excel spreadsheets to keep track of building locations, fixture counts, resulting light output, energy consumption, and associated construction costs. These spreadsheets are included in Section IV through XI.

Light Output Calculations

Presented below is a brief description of general concepts and the approach utilized in formulating lighting calculations for the Excel Spreadsheet. A more detailed explanation of assumptions, derivations, and use of the calculations is presented in Appendix 1.

We examined reducing the fixture "operating duration" to minimize the energy consumed. Such "operating duration" reduction can be accomplished by the use of occupancy sensors. We elected not to pursue this approach in our study due to the following reasons:

1) It incurs additional project installation costs for wiring.

2) It complicates the design, thus increasing design costs.

3) It is inconvenient. It relies on an electronic device to function perfectly in an industrial manufacturing environment. If the device does not function perfectly, someone may be endangered or injured if the lights were to suddenly turn off during a critical manufacturing process. Occupancy sensors were really designed for use in clean office environments.

4) The rooms where they would be installed, such as restrooms, do not have enough fixtures to have a significant impact upon the building's overall energy consumption if left off.

We also examined adding switches to turn off lights over selected areas. This would allow lights over unused areas to be turned off while leaving lights on in the surrounding areas. We elected not to pursue this in the study due to the following reasons:

1) The existing system appears to have adequate selectivity at the lighting panel.

2) Adding switches would increase project design costs and wiring installation costs.

3) The production area is comprised of long narrow regions, making it difficult to turn off lights in one location without affecting the surrounding areas.

The spreadsheets mentioned above also calculate lumen output. The lumen output calculations are based upon size of room, reflectance of walls, ceilings, and floors, quantity of fixtures, and lumen output for the type of fixtures chosen. The purpose of this report is to consider alternate lighting systems to determine if energy savings can justify the feasibility of implementing a particular ECO. Several assumptions have been made in calculating lumen output to speed up the analysis. These assumptions are included in a detailed description of calculation formulas in Appendix 1 of this report. More exact lighting analysis can be performed by the design professional responsible for construction drawings incorporating selected ECO's.

We categorized lighting in buildings into several areas. These areas are defined in Table 7.

TABLE 7. LOCATION DESIGNATIONS & ASSOCIATED INFORMATION

Location Designation	Description	Range of Fixture Mounting Height/Ft	Assumed Mounting Height for Lighting Calculations
B	Belt	7 - 9.5	8
C	Building	9 - 19	15
R	Ramp	7 - 8.5	8
L	Loading	7 - 8	8
CR	Connecting Ramp	8 - 9	8

Calculation of the fixture light output (expressed in footcandles) with a coefficient of utilization (CU) is based upon a room cavity ratio (RCR) that uses a 3 foot working height above the floor. This height is the average belt height in a production building. The lighting calculations are used to verify our work, and as a comparison with existing conditions and upgrade conditions. Existing conditions are documented on our spreadsheet as lux values. Lux is simply a different unit of measurement for light, and can easily be converted to footcandles via a conversion factor found in the Standard Handbook for Electrical Engineers:

Lux / 10.76 = footcandles

Lighting calculations are based upon the RCR method. See the attached information in Volume 1 of this report for a more thorough description of this method.

Footcandle calculations are based upon lumen output of the various lamps being considered for ECO's. Table 8 shows fixture, lamp, and lumen data. This data can be confirmed by examining the manufacturer's catalog cut sheets.

TABLE 8. LAMP LIFE AND LUMEN OUTPUT DATA

Fixture Designation	Lamps per Fixture	Lamp Designation	Lamp Life (hours)	Mean Lumens per Fixture
I100	1	A23, MED.	1,000	1,340
I200	1	PS30, MED.	1,000	3,400
I300	1	PS30, MED.	2,500	5,190
MV10	1	E23-1/2, MOG.	24,000	2,800
MH70	1	BD17, MED.	7,500	4,000
HP50	1	E23-1/2, MOG.	24,000	3,600
HP70	1	E23-1/2, MOG.	24,000	5,450
F212	2	T12	20,000	5,140
F312	3	T12	20,000	7,710
F208	2	T8	20,000	5,300

With the RCR method of lighting calculation, we assume a symmetrical layout of light fixtures in a room. We have categorized areas into actual and theoretical rooms and assigned arbitrary room numbers to assist us in our calculations. These room numbers can be

observed on the attached drawings. In general, Building (C) lighting was fairly symmetrical in a room. Belt (B) lighting was concentrated over a belt across several rooms. For purposes of performing the RCR calculations, we assigned a long and narrow imaginary room to these belts. We used a similar procedure for ramp (R) lighting. This provides average light level calculations. We did not calculate fluorescent task lighting and loading lights as these fixtures were for local area (task) lighting and could be assumed to be adequate. We elected to use the RCR method of analysis because it gives us the accuracy necessary to validate the report. Footcandle values at specific locations can be obtained by performing a more detailed analysis (referred to as a point-by-point method of lighting calculations). The detail of a point by point analysis however, is not warranted for this energy study. This type of analysis can be performed if construction drawings are authorized as a result of this study.

The RCR method of lighting calculations are based upon the following formulas:

- Height, Room Cavity = Height, Fixtures - Height, Working Plane

  or

  $h_{rc} = h_f - h_{wp}$

- Light Loss Factor = Lamp Lumen Depreciation x Lamp Dirt Depreciation

  LLF = LLD x LDD

This factor is used to accommodate the loss of light output due to the age of the lamp, the accumulation of dirt upon the fixture's lens, and reflector surfaces degradation. These numbers are relatively high to counteract the use of median lumen values (not initial lumen values).

- Lumens/Fixture = Lumens/Lamp x Lamps/Fixture

This formula simply states that the lumen output of a fixture is the sum of the lumen output of the lamps in that fixture. Lumens/lamp are mean values (not initial values).

- Total Lumens = Lumens/Fixture X # of Fixture

This formula states that the lumens in a room are a sum of the lumens from all the fixtures in a room.

- Average Footcandles = $\frac{\text{Total Lumens x C.U. x LLF}}{\text{Area of Room}}$

  where C.U. is coefficient of utilization - which is fixture and room dependant.

- Area of Rooms = Room Length x Room Width

The above C.U. is determined from the calculated room cavity ratio, the determined percent reflectance of the walls, ceilings, and floors, and the published fixture's empirical reflectance characteristics.

Calculations based on the concepts described above are used to determine average light output. The associated formulas can be found in Appendix 1. The calculations are performed automatically by the Excel Spreadsheet. Once footcandle calculations were generated by the Excel spreadsheets, we examined these values and determined if the number of fixtures should be adjusted or if fixture wattage should be adjusted. Generally we reduced the fixture wattage, since the quantity was necessary to maintain more uniform lighting for visual comfort or was necessary due to it's location over a specific task that needed to be lit.

Occasionally we reduced the quantity of fixtures in a room and these values are shown on our spreadsheet as shaded. As mentioned previously, these calculations helped to eliminate the use of higher wattage fixtures for two reasons:

1) They were too intense in light at the average work plane.
2) They did not give uniform area lighting, nor were they appropriate as task lighting.

The results of these calculations can be seen as computer output in Section VI through XI.

Energy Rate Data

Energy costs were determined from Milan public utilities. A copy of a telephone conversation record and utility rate sheet are included in Appendix 8. The energy rates are included here as Table 9.

TABLE 9. MILAN PUBLIC UTILITIES ELECTRICAL RATES FOR MILAN ARMY AMMUNITION PLANT

ITEM	COST ($)	PER UNIT
Energy Charge	0.03124	kWh
Monthly Demand Charge	7.63	kW (first 1,000)
Monthly Demand Charge	8.67	kW (over 1,000)

Milan public utilities is on Tennessee Valley Authority (TVA) power and therefore has economical and stable power rates. This economical source of power is good for the customer, but makes it hard for the consulting engineer to show economic justification for an energy conservation project. Other rate charges include a monthly customer charge of $7.39, which does not apply to this project. There is only one connection point for primary power, and thus only one monthly customer charge. This charge is continual until the Army no longer buys power from the City of Milan. Thus, this charge has no bearing upon this study. Regarding the demand rate issue - Milan's charge for demand rate is $7.63 for the first 1,000 kW and $8.67 for demand above 1,000 kW. Presently, the demand consumption of the Army Ammunition Plant is near 4,000 kW. The reduction in energy due to a fixture changeout would not get us below 1,000 kW, so all differential energy savings are calculated using the higher demand charge.

Cost Data

Construction costs were based upon 1994 Means installation costs and Crouse Hinds fixture costs. Costs for lamps and ballasts were also obtained from a local supply house and checked against values in the Means cost guide compensated for costs in the Milan Area. This data was used to formulate installed fixture costs as follows:

Fixture Cost = Labor for Removal Cost + (Materials and Labor) Installation Cost + Additional Wiring Costs (for a short conduit extension).

This derivation is indicated on the attached cost estimates included in Appendix 3 of this report.

Since the existing wiring is in working condition now, we assumed that it would continue to work with a one for one replacement up to the maximum wattage of the fixture removed. This

assumption helped to minimize ECO new project costs. This assumption, however, was not totally valid for the upgrade of the existing facilities. We observed existing panelboards during our site visit and most were without room for additional circuits. Additional circuits would be required during the upgrade of existing. Therefore, we included money ($1,500.00) for a new panelboard in each building and for an increase in branch circuits. (Please examine attached cost estimate sheets).

Results

The results of analysis of the 5 alternatives (Alternate 2 through 6) for Energy Conservation Opportunities at each building are indicated on the attached spreadsheets. The formulas and some rationale for the calculations are explained in Appendix 1. Please examine these sheets for a detailed explanation of what is on these spreadsheets. Basically the results of the field investigation were tabulated with regards to quantity, type, size, power draw, light output, and location.

As previously explained, the existing conditions were examined for a lighting repair with incandescent fixtures (to match existing). This upgrade included relamping all fixtures, replacing burnt out ballasts, and providing new fixtures to replace those that were broken and could not be repaired to restore the Class II rating.

Alternate 1/Baseline establishes the basic cost to bring these buildings up to acceptable lighting levels regardless of whether further analysis is to be performed for energy conservation. This baseline work includes the upgrades mentioned above, and $1,500.00 per building to provide a new panelboard at each. The results are shown in the lower right hand corner under the "Total Baseline Cost". Additional information on this spreadsheet includes the resulting "Total Power (kWh)" and the cost for new fixtures - "New Fixture Cost", with the associated loads (at existing conditions and upgraded conditions).

The Alternates 2 through 6 are then examined as previously discussed. The Excel spreadsheets show the differential (or delta) costs of each alternate versus the baseline. The results are shown in the lower right hand corner under "Delta Power (kWh)" and "Delta Fixture Cost". Our next analysis calculates the amount of light that will result from either the baseline upgrade (Alternate 1) or the 5 Alternates (Alternate 2 through 6). These calculations are based upon the Room Cavity Ratio method as explained previously. These results were used merely as a check to the accuracy of the results. Eliminated from the analysis were alternates

with higher lamp wattages, e.g., we eliminated 100 watt HPS and 100 watt MH fixtures. The light output from these fixtures was excessive and so they were eliminated prior to any further analysis. Additionally, the concept of fewer, high wattage fixtures is not feasible as previously discussed. The results are shown on the right hand column under "fc" (which stands for footcandles).

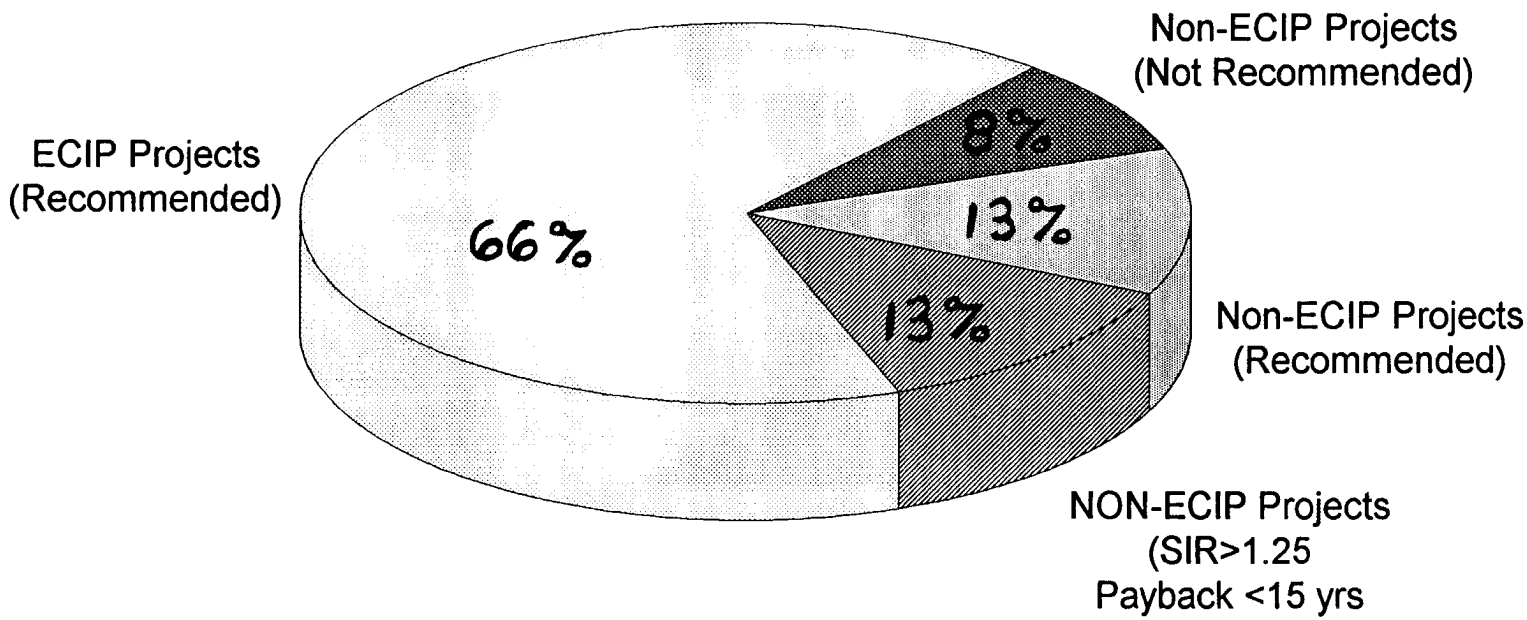
Finally, we performed an analysis with Excel to determine the maintenance costs associated with the baseline upgrade (Alternate 1) and the various 5 Alternates (Alternate 2 through 6). The results of this analysis are shown on the right hand column under "Maintenance Savings (Baseline)". This output data is the dollar savings in going with the alternate over staying with the baseline.

The above three analyses were performed on every ECO with every alternative (Alternate 1 through 6). The results of these analyses (as discussed above) were used as input data for the ECIP/LCCA/LCCID computer program. The procedure for obtaining this information and inputting it into the LCCID program is described in the attached Appendix 1. The results of the LCCID analyses are included as LCCID output data sheets. Included on these LCCA/LCCID output data sheets are categories for construction, SIOH, and design costs, energy savings, non-energy savings, SIR, and first year dollar savings. The existing lighting systems were all upgraded in alternate 1 to meet IES lighting standards. Alternates 2 - 6 were designed to meet IES standards and were compared to the upgraded system in Alternate 1. Since the chosen alternates would replace the existing lighting system, the baseline upgrade would not need to be performed and can be used as a non-energy savings for Alternates 2 - 6. Calculations and further information are located in Appendix 1.

Some of this output is in turn summarized per building on the "LCCA/LCCID Output Summary" sheets. These sheets are included in Appendix 1. From these "LCCA/LCCID Output Summary" sheets, we were able to prioritize and separate the projects into feasible and non-feasible projects (see Figure 8). These projects were prioritized from highest to lowest SIR. As a result, they were also prioritized from lowest to highest "simple payback in years". The priority was divided into three categories:

a) Feasible ECO's
   Recommended - ECIP Projects
   SIR > 1.25
   Simple payback < 10 years

LCCID ANALYSIS RESULTS
- All Buildings -



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FIGURE 8

b) Feasible ECO's - Recommended and
Not Recommended - ECIP and Non ECIP Projects
SIR > 1.00
Simple payback > 10 years
but < 15 years

c) Unfeasible ECO's
Not Recommended
SIR < 1.00
Simple payback > 10 years

Please note the following regarding the (b) and (c) categories above. A dividing line is drawn at the point where SIR < 1.25 on category (b) above and where simple payback > 15 years. These lines serve as indicators that the alternates chosen do not meet the ECIP requirements for SIR > 1.25, or become unfeasible in time of payback (>15 years). The above analyses are summarized in our synergism analysis sheets in Section IV as recommended packages #1 through 5. These packages were also required to be put through another analysis with LCCID. The results of this further LCCID analysis are included in Section IV. The packages and their cost are as follows:

Package 1	$ 544,820.00
Package 2	$ 313,504.00
Package 3	$ 398,310.00
Package 4	$ 304,803.00
Package 5	$ 330,101.00
TOTAL	**$1,891,538.00**

CONCLUSION

All the chosen alternates result in white lighting throughout the buildings and reuse of existing T12 fixtures. The selected alternates produce energy savings of one million kWh per year, a 6.5 percent reduction (see Figure 9).

We have considered that a one time charge may be necessary to account for disposal of additional lamps and PCB ballasts above what would be required if no building upgrades were performed. We suggest that the Owner include an additional $1,000.00 for the project. This cost is based on telephone conversations with Laurie Chase of MTI Waste Management and Mike Robinson of Martin Marietta Environmental Services.

YEARLY ENERGY CONSUMPTION

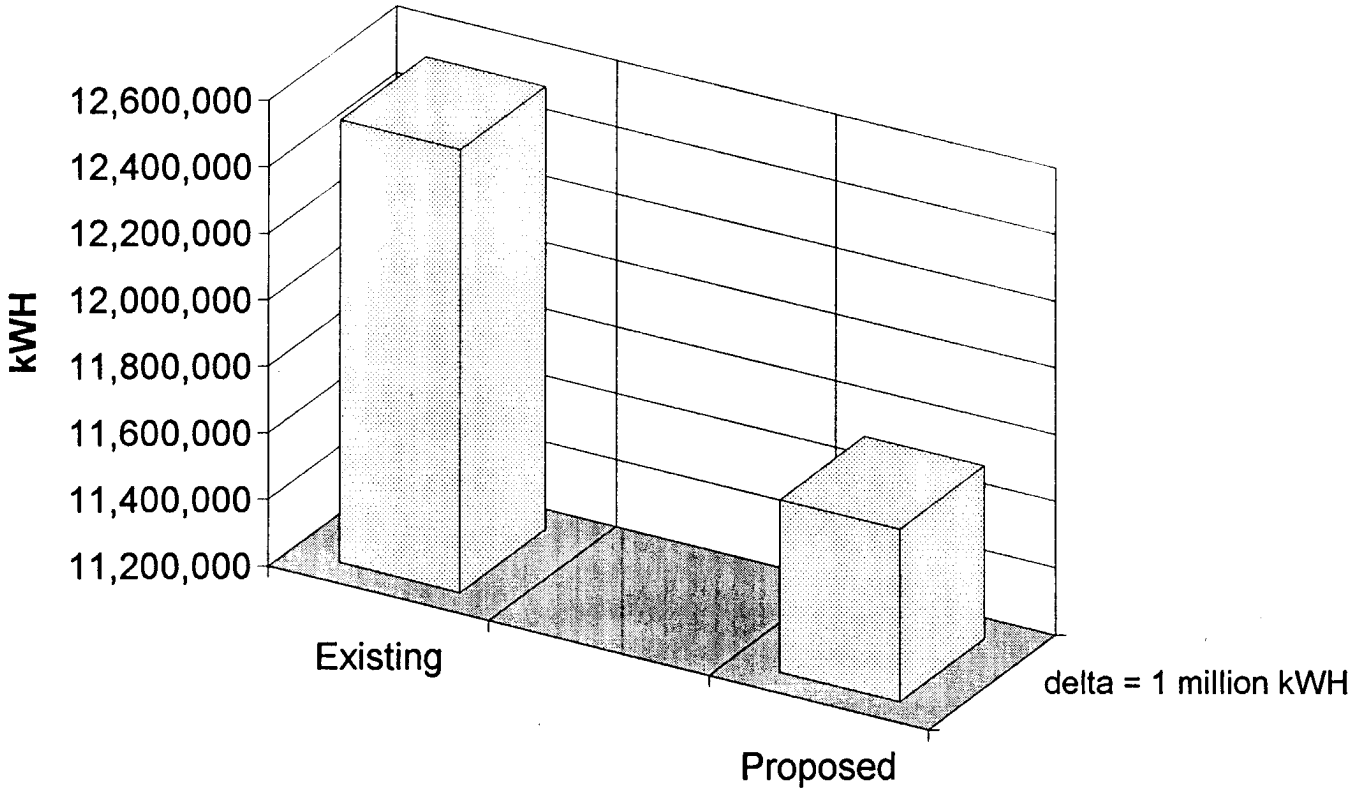


FIGURE 9

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Definitions/Abbreviations

AESE: Affiliated Engineers SE, Inc.

Ballast: A device which controls current to start a lamp, then regulates the current to keep from over or under driving the lamp. They are available with magnetic or electronic (solid state) controls.

Coefficient of Utilization (CU): This number gives the percentage of lumens from a fixture which will reach a work surface. It is a lookup value based on room cavity ratio and room reflectances.

Color Rendering Index: This number ranges from 0 to 100 and is a measure of how colors look under a specific type of lamp. Incandescent lamps are rated 100, meaning they reproduce color perfectly.

Efficacy: This is a measure of how well a lamp converts energy into light, and is measured in lumens per watt.

ECO: Energy Conservation Opportunity

Energy Conservation Investment Program (ECIP): This is a federal government program which allocates funds for projects which increase energy efficiency.

Fluorescent Lamp: Gas in the tube is excited by the presence of electricity and emits ultraviolet radiation which strikes a phosphor coating and produces light. The color of the light depends on the type of phosphors used. This type of lamp requires a ballast to maintain and control current.

High Intensity Discharge (HID) Lamps: These lamps use a gas or vapor in an arc tube rather than standard filament to produce light. Sodium, metal-halide, and mercury vapor lamps are all HID lamps.

High Pressure Sodium (HPS) Lamps: The arc tube in this lamp is filled with sodium gas at a very high pressure and produces a yellow colored light. This type of lamp requires a ballast to maintain and control current.

Incandescent Lamp: A filament is heated until it begins to glow enough to produce visible light.

Life Cycle Cost in Design (LCCID): Government software package used to evaluate projects for ECIP funding.

Light Loss Factor (LLF): Value representing how rapidly the light output of a fixture will degrade, based on lamp performance and cleanliness of the surroundings, and is a number between zero and one. The higher the value, the longer a fixture will maintain its lumen output.

Lumens Per Watt (LPW): This is a measurement of the amount of light produced for every watt of power consumed by lighting a system. For lamps using ballasts, LPW measurements should take the ballast wattage into account.

Mercury Vapor (MV) Lamp: Mercury vapor in the arc tube produces a blue/white light when excited. This type of lamp requires a ballast to maintain and control current.

Metal - Halide (MH) Lamp: Various metals are added to mercury vapor to produce a clean, white light. This type of lamp requires a ballast to maintain and control current.

Power Factor (pf): This is obtained by dividing the listed wattage of a device by the measured wattage, and will always be 1.0 or lower.

PDB: Project Development Brochure

Room Cavity Ratio (RCR): This number is determined based upon room dimensions and the distance between a fixture and work surface. It is used to find the coefficient of utilization.

SIR: Savings to Investment Ratio

Supervision, Inspection, & Overhead (SIOH): This is a percentage of the construction cost which is added to include non-direct project costs.

T12 Lamp: A fluorescent lamp with diameter 12/8 inch, or 1.5 inches. They are available in various standard lengths.

T8 Lamp: A fluorescent lamp with diameter 8/8 inch, or 1 inch. They are available in the same lengths as T12 lamps.

III. Catalog Cut Sheets

- Fixture Data
- Lamp Data
- Ballast Data

Fixture Data

Incandescent Lighting Fixtures Factory Sealed

Class I, Groups C,D†
Class II, Groups E,F,G

Photometric Data
Pg. 2L-6 to 8

Crouse-Hinds®

Application:

EVA, EVCX, EVBX, EVJ, and EVSJ incandescent lighting fixtures are used:
- in locations which are hazardous due to the presence of flammable vapors or gases or where dampness or corrosion are present
- in petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- as pendant, ceiling, wall bracket or bulkhead fixtures indoors for general area or room lighting, or outdoors for "spot" lighting

Features:

- Flametight threaded joints – no external seal required
- Easy to assemble and relamp
- Shock absorbing receptacle
- Gasket seals out dirt and liquids
- Positive locking of globe holder
- Inner reflector eliminates upward spill light
- Light weight, corrosion resistant, copper-free aluminum

Standard Materials:

- Body and guard – copper-free aluminum
- Globe – glass, heat and impact resistant

Standard Finishes:

- Body and guard – epoxy powder coat

Size Ranges:

- ½" through 1¼" hubs

Capacity Ranges:

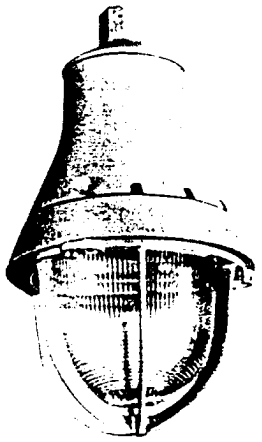
- 100 watt, A-19 to 500 watt, PS-40 lamps

Compliances:

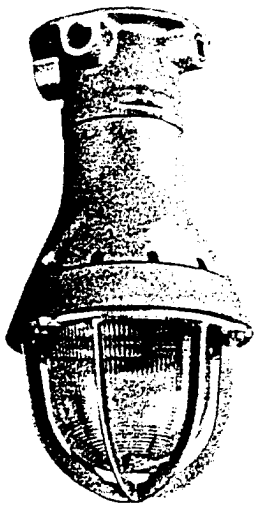
- NEC: Class I, Groups C, D
  Class II, Groups E, F, G
- UL Standard: 844

Options:

- Reflectors – see page 2L-5



EVA Pendant



EVCX Ceiling

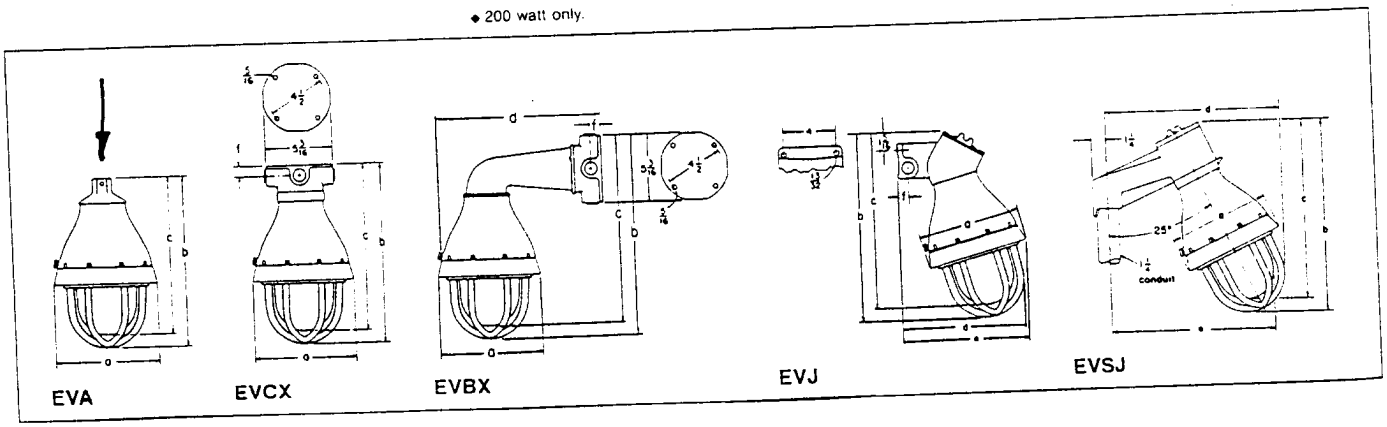
Dimensions

Max. Lamp Size	Type	a	b‡	c	d	e	f ½	f ¾
100 watt, A-19 150 watt, A-21 200 watt, A-23 (medium base)	EVA	7¼	12⅝	11¾	12½	9⅜	⅝	¾
	EVCX		13⅝	12¾				
	EVBX		15⅜	14½			⅝	¾
	EVJ		14⅛	13¼	9⅝	11¼	13/16	13/16◆
	EVSJ		14⅛	13 5/16	11 15/16			
200 watt, A-25 and PS-25 300 watt, PS-25 (Medium base)	EVA	7¼	13⅜	12½	12½	9½	⅝	¾
	EVCX		14⅜	13½				
	EVBX		16⅛	15¼			⅝	¾
	EVJ		14⅞	14	9¾	11 9/16	13/16	13/16
	EVSJ		14 13/16	14	12¼			
200/300 watt, PS-30 (Medium base)	EVA	8½	14¾	13½	13⅛	10¼	⅝	¾
	EVCX		15⅝	14½				
	EVBX		17⅜	16¼			⅝	¾
	EVJ		16¼	15⅛	10½	12 7/16	13/16	13/16
	EVSJ		16⅛	15	13 3/16			
300 watt, PS-35 500 watt, PS-40 (Mogul base)	EVA	10	17	15½	13¾	13 9/16	⅝	¾
	EVCX		18	16½				
	EVBX		19¾	18¼			⅝	½
	EVSJ		18⅛	16¾	14 9/16			

† Ratings are for lamp base up mounting.

‡ When angle reflectors are used, dimension "b" should be changed as follows: Add 3¾" max. to EVA; 4⅞" max. to EVBX and EVCX; 4½" max. to EVJ; and 6" max. to EVSJ.

◆ 200 watt only.



EVA EVCX EVBX EVJ EVSJ

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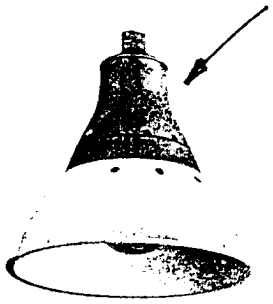
111-3

EVA and EVCX Incandescent Lighting Fixture Assemblies Factory Sealed

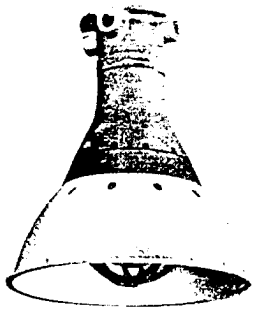
Class I, Groups C,D†
Class II, Groups E,F,G

Photometric Data
Pg. 2L-6 to 8

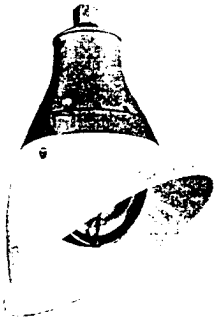
Crouse-Hinds®



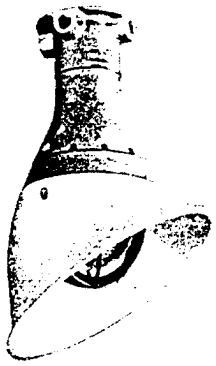
Pendant Assembly With Globe And Dome Reflector



Ceiling Assembly With Globe/Guard And Dome Reflector



Pendant Assembly With Globe/Guard And 30° Angle Reflector



Ceiling Assembly With Globe/Guard And 30° Angle Reflector

Max. Lamp Size				Assembly With Dome Reflector		Assembly With 30° Angle Reflector		Temperature Performance Data (based on 40°C Ambient)		
Class I, Groups C,D	Class II, Groups E,F,G	Style	Hub Size	Pendant Cat. #	Ceiling Cat. #	Pendant Cat. #	Ceiling Cat. #	Class I	Class II	Supply Wire (°C)
100W, A-19		With guard	½	EVA1401	EVCX1401	EVA1407	EVCX1407	T3C (100W)	—	110°C
			¾	EVA2401	EVCX2401	EVA2407	EVCX2407			
		Without guard	½	EVA1041	EVCX1041	EVA1047	EVCX1047			
			¾	EVA2041	EVCX2041	EVA2047	EVCX2047			
150W, A-21— 200W, A-23		With guard	½	EVA1101	EVCX1101	EVA1107	EVCX1107	T3C (150W) (200W)	—	110°C
			¾	EVA2101	EVCX2101	EVA2107	EVCX2107			
			1	EVA3101		EVA3107				
		Without guard	½	EVA1011	EVCX1011	EVA1017	EVCX1017			
			¾	EVA2011	EVCX2011	EVA2017	EVCX2017			
			1	EVA3011		EVA3017				
200W, A-25 & PS-25— 300W, PS-25‡ I100	✓ 100W, A-23	With guard →	½	EVA1151	EVCX1151	EVA1157	EVCX1157	T3C (200W)	T3B (100W)	110°C
			¾	EVA2151	EVCX2151	EVA2157	EVCX2157			
			1	EVA3151		EVA3157				
		Without guard	½	EVA1051	EVCX1051	EVA1057	EVCX1057	T3A (300W)		
			¾	EVA2051	EVCX2051	EVA2057	EVCX2057			
			1	EVA3051		EVA3057				
200/300W, PS-30	150W, A-21	With guard	½	EVA1201	EVCX1201	EVA1207	EVCX1207	T3C (200W)	T3B (150W)	110°C
			¾	EVA2201	EVCX2201	EVA2207	EVCX2207			
			1	EVA3201		EVA3207				
		Without guard	½	EVA1021	EVCX1021	EVA1027	EVCX1027	T3A (300W)		
			¾	EVA2021	EVCX2021	EVA2027	EVCX2027			
			1	EVA3021		EVA3027				
300W, PS-35— 500W, PS-40‡ I200	✓ 200W, PS-30	With guard →	½		EVCX1301		EVCX1307	T3A (300W)	T3B (200W)	150°C
			¾	EVA2301	EVCX2301	EVA2307	EVCX2307			
			1¼	EVA4301		EVA4307				
		Without guard	½		EVCX1031		EVCX1037	T3 (500W)		
			¾	EVA2031	EVCX2031	EVA2037	EVCX2037			
			1¼	EVA4031		EVA4037				

† Ratings are for lamp base up mounting.

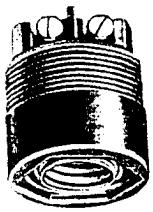
‡ 300 watt, PS-25 and 500 watt, PS-40 (with or without reflectors) for use in Class I, Group D areas only.

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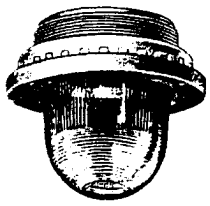
Replacement Parts
Reflectors

Class I, Groups C,D
Class II, Groups E,F,G

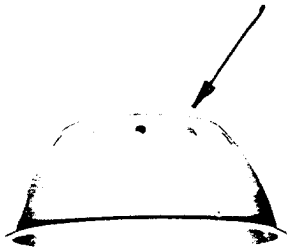
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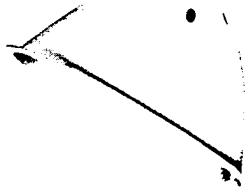
Lamp receptacles



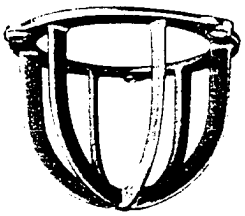
Globe and holder assemblies



Dome



30° Angle



Guards



High bay

Replacement Parts

Fixture Size	Lamp Receptacle Cat. #	Guards Cat. #	Globe and Holder Assemblies Cat. #
100 watt A-19 through 300 watt PS-25	EV60	EV505	EV78
200/300 watt PS-30	EV60	EV502	EV7202
300 watt PS-35 500 watt PS-40	EV62	EV503	EV7302

Reflectors

For EVA, EVCX, EVBX and EVJ on Pages 2L-3 and 2L-4

Material:

- Dome and 30° angle – white fiberlgass-reinforced polyester (*Krydon*®)
- High bay – etched Alzak® aluminum with natural finish

Max. Lamp Size	Style	Dia.	Cat. #
100 watt, A-19	Dome	12"	RD63
150 watt, A-21 200 watt, A-23	30° Angle	12"	RA63
200 watt, A-25 and PS-25 300 watt, PS-25			
200/300 watt, PS-30	Dome	16"	RD72*
	30° Angle	16"	RA72
	High Bay	14½"	EV2912*
300 watt, PS-35 500 watt, PS-40	Dome	16"	RD73*
	30° Angle	16"	RA73
	High Bay	16¾"	EV3912*

* These reflectors cannot be used on wall bracket or bulkhead fixtures.

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Incandescent Lighting Fixtures

EV Series

Class I, Groups C,D
Class II, Groups E,F,G

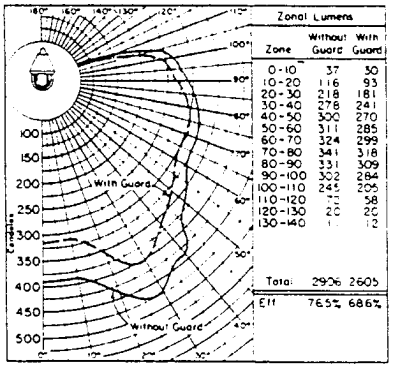
Crouse-Hinds®

Photometric Data

Lamp Data: 100W/A-19 through 300W/PS-30
To determine number and placement of fixtures, see Lighting Selector Guide, pages L-7 to L-12.

NOTE: All data provided is for 200W/A-25 incandescent lamp. Use following candela/lumens multipliers for other lamp sizes: 100W/A-19 0.44; 150W/A-21 0.72; 200W/A-23 1.03; 200W/PS-25 0.84; 200W/PS-30 0.96; 300W/PS-30 1.57

Fixture With Globe and With or Without Guard



Example: Zonal lumens for 200W/A-25 lamp without guard for 20-30° is 218. Zonal lumens for 150W/A-21 lamp for 20-30° is 218 x 0.72 = 157.

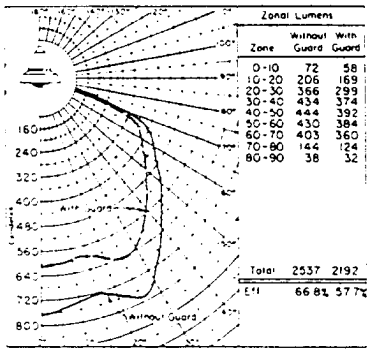
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.706	.601	.521	.457	.403
80	30	.659	.537	.451	.382	.330
	10	.618	.483	.395	.326	.275
	50	.671	.572	.497	.435	.384
70	30	.629	.513	.432	.367	.316
	10	.590	.465	.380	.314	.265
	50	.605	.515	.449	.393	.349
50	30	.571	.468	.395	.336	.291
	10	.541	.426	.351	.292	.247
	50	.545	.464	.404	.355	.316
30	30	.519	.426	.361	.308	.266
	10	.494	.392	.324	.269	.229
	50	.491	.416	.363	.319	.284
10	30	.469	.385	.327	.280	.244
	10	.449	.358	.296	.247	.210

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.362	.324	.291	.265	.234
80	30	.290	.254	.224	.200	.170
	10	.238	.207	.177	.155	.129
	50	.345	.310	.279	.254	.223
70	30	.278	.244	.216	.192	.165
	10	.228	.199	.171	.151	.126
	50	.313	.282	.254	.232	.205
50	30	.256	.224	.200	.178	.153
	10	.214	.185	.160	.141	.117
	50	.284	.255	.232	.212	.187
30	30	.236	.208	.183	.164	.140
	10	.198	.171	.149	.131	.107
	50	.257	.233	.210	.192	.170
10	30	.215	.191	.168	.151	.128
	10	.183	.158	.138	.121	.099

Fixture With Globe, Dome Reflector and With or Without Guard



Example: Zonal lumens for 200W/A-25 lamp without guard for 20-30° is 366. Zonal lumens for 150W/A-21 lamp for 20-30° is 366 x 0.72 = 263.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.700	.618	.547	.485	.432
80	30	.672	.576	.497	.428	.373
	10	.648	.540	.457	.385	.330
	50	.685	.606	.538	.476	.423
70	30	.659	.566	.490	.424	.369
	10	.636	.535	.453	.382	.328
	50	.655	.582	.519	.459	.410
50	30	.635	.550	.478	.414	.362
	10	.617	.520	.445	.378	.325
	50	.629	.561	.501	.444	.397
30	30	.613	.534	.466	.405	.354
	10	.597	.509	.437	.373	.321
	50	.607	.541	.484	.430	.385
10	30	.593	.518	.455	.395	.348
	10	.580	.498	.430	.367	.317

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.389	.350	.316	.289	.252
80	30	.331	.294	.261	.234	.197
	10	.290	.255	.221	.196	.162
	50	.383	.345	.312	.285	.248
70	30	.328	.290	.259	.232	.197
	10	.287	.252	.220	.196	.162
	50	.370	.335	.302	.277	.242
50	30	.322	.284	.254	.228	.194
	10	.285	.250	.219	.195	.161
	50	.360	.324	.294	.270	.235
30	30	.316	.281	.249	.224	.191
	10	.283	.247	.217	.193	.159
	50	.349	.317	.286	.262	.230
10	30	.310	.277	.246	.221	.188
	10	.279	.245	.216	.191	.158

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VMV Series Champ® H.I.D. Lighting Fixtures Enclosed & Gasketed

Class II, Groups E,F,G♦*
Class III♦*
Simultaneous Presence♦*
Wet Locations
Marine Locations

Crouse-Hinds®

Application:

VMV series *Champ* lighting fixtures are used:
- in manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore, dockside, and harbor installations, and other heavy industrial applications
- in areas in which ignitible concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions♦
- where combustible dusts are present♦*
- in marine applications where water spray and corrosive atmospheres are considerations
- in elevated ambient temperatures often found in industrial applications
- in installations where moisture, dirt, dust, vibration, corrosion, and rough usage are problems
- wherever the damaging effects of water, wind, snow, sleet, hot sun, or any combination of these elements are found

Features:

- Compact, lightweight design is ideal for medium and low mounting heights
- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion
- Seven mounting arrangements to suit any lighting layout – pendant, flexible pendant, ceiling, wall bracket, angle stanchion, straight stanchion, and quad-mount
- Wide range of light sources and wattages to meet specifiers' needs: 50, 70, 100, and 150 watt high pressure sodium (HPS); 75, 100, and 175 watt mercury vapor (MV); 70, 100, 175 watt metal halide (MH)
- Hinged ballast housing for ease of installation and maintenance
- Wide choice of photometric distributions. Glass globes, refractors and compact refractors available for all wattage fixtures; plastic refractors for 50-100 watt fixtures
- All fixtures are designed to perform in a 40°C ambient temperature. Selected fixtures are suitable for ambient temperatures up to 65°C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation
- Low ambient capability to (–40°C)
- Dome and 30° angle reflectors made of bright white *Krydon*® material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode



- Grounding wire for increased safety
- Ballasts available in voltages of 120, 208, 240, 277, 480 and multi-tap (dual-tap for 50W HPS)
- Mogul base porcelain lamp socket

Standard Materials:

- Ballast housings and mountings – copper free aluminum (less than 0.4 of 1%)
- Exterior hardware – stainless steel
- Reflectors (dome and angle) – *Krydon* fiberglass-reinforced polyester material
- Globes – heat and impact resistant internally fluted glass
- Refractors – glass (50-175 watts); plastic (50-100 watts)
- Guards: globe – copper-free aluminum
  refractor – stainless steel

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- *Krydon* material – high reflectance white
- Stainless steel – natural

Electrical Ratings:

- 120 to 480 volts and multi-tap
- 50 to 150W HPS; 75 to 175W MV; 70 to 175W MH

Compliances:

- NEC: Class I, Division 2, Groups A,B,C,D – All♦
  Class II, Groups E,F,G – 50, 70W HPS
  Class III – 50, 70W HPS
  Simultaneous Presence (Class I, Div. 2/Class II) – 50, 70W HPS
- UL Standards: 595 Marine Locations; 844 Hazardous (Classified) Locations: 1572 Ordinary and Wet Locations

Options:

The following special options are available from the factory by adding suffix to fixture Cat. No.:

Description	Suffix to be added to Cat. No.
• Fused – to protect ballast and capacitors against abnormal line conditions	S658
• *Corro-free*™ epoxy finish – for use in severely corrosive environments	S752
• Ballast-Gard™ starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50-150W LX HPS only	BG
• Instant restrike ballast – enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. Available for use with 50-150W LX HPS only	IR
• Quartz auxiliary lighting – comes to full brightness immediately and remains lit until the HID lamp attains 60-70% of full illumination. For *non-hazardous* locations only (Fixtures ordered with this option must use glass refractor optics.)	QTZ†
• Globe with silicone coating – for increased shatter protection	S713

(Note: BG and IR options cannot be used together, IR and QTZ options cannot be used together.)

Accessories:

- See pages 3L-28 and 29 for complete listing.

♦ Suitability of specific fixtures for use in hazardous locations depends upon many factors including the properties of the hazardous substance(s) which may be present, ambient temperatures, lamp type and wattage, etc. Consult Crouse-Hinds field representative or headquarters for further information.

* Class II, Class III, Simultaneous Presence – 50 and 70 watt HPS only.

† Quartz lamp not included use 100W single ended lamp – Q100DC, Q100CL/DC or 100Q/CL/DC.

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III-7

Champ® H.I.D. Lighting Fixtures

Integral Ballast
Enclosed & Gasketed

Class II, Groups E,F,G♦*
Class III♦*
Simultaneous Presence♦*
Wet Locations
Marine Locations

Crouse-Hinds®

High Pressure Sodium

High Power Factor Ballast (Min. P.F. 90%) – See Notes 1 (to specify voltage) and 2



Mounting Style	Hub Size	Lamp Watts[2]	With G24 Globe and P21 Guard Cat. No.†	With G241 Type I Compact Refractor Cat. No.**	With G245 Type V Compact Refractor Cat. No.**	With R5 Glass Refractor‡ Cat. No.***
Pendant Mount	¾	50	VMVS2A050GP	VMVS2A050G241	VMVS2A050G245	VMVS2A050R5
	1		VMVS3A050GP	VMVS3A050G241	VMVS3A050G245	VMVS3A050R5
	¾	70	VMVS2A070GP	VMVS2A070G241	VMVS2A070G245	VMVS2A070R5
	1		VMVS3A070GP	VMVS3A070G241	VMVS3A070G245	VMVS3A070R5
	¾	100	VMVS2A100GP	VMVS2A100G241	VMVS2A100G245	VMVS2A100R5
	1		VMVS3A100GP	VMVS3A100G241	VMVS3A100G245	VMVS3A100R5
	¾	150	VMVS2A150GP	VMVS2A150G241	VMVS2A150G245	VMVS2A150R5
	1		VMVS3A150GP	VMVS3A150G241	VMVS3A150G245	VMVS3A150R5



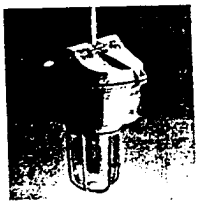
Flexible Pendant Mount	¾	50	VMVS2HA050GP	VMVS2HA050G241	VMVS2HA050G245	VMVS2HA050R5
	¾	70	VMVS2HA070GP	VMVS2HA070G241	VMVS2HA070G245	VMVS2HA070R5
	¾	100	VMVS2HA100GP	VMVS2HA100G241	VMVS2HA100G245	VMVS2HA100R5
	¾	150	VMVS2HA150GP	VMVS2HA150G241	VMVS2HA150G245	VMVS2HA150R5



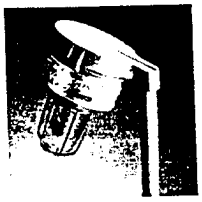
Ceiling Mount Thru-Feed	¾	50	VMVS2C050GP	VMVS2C050G241	VMVS2C050G245	VMVS2C050R5
	1		VMVS3C050GP	VMVS3C050G241	VMVS3C050G245	VMVS3C050R5
	¾	70	VMVS2C070GP	VMVS2C070G241	VMVS2C070G245	VMVS2C070R5
	1		VMVS3C070GP	VMVS3C070G241	VMVS3C070G245	VMVS3C070R5
	¾	100	VMVS2C100GP	VMVS2C100G241	VMVS2C100G245	VMVS2C100R5
	1		VMVS3C100GP	VMVS3C100G241	VMVS3C100G245	VMVS3C100R5
	¾	150	VMVS2C150GP	VMVS2C150G241	VMVS2C150G245	VMVS2C150R5
	1		VMVS3C150GP	VMVS3C150G241	VMVS3C150G245	VMVS3C150R5



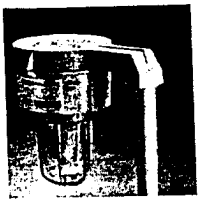
Wall Mount Thru-Feed	¾	50	VMVS2TW050GP	VMVS2TW050G241	VMVS2TW050G245	VMVS2TW050R5
	1		VMVS3TW050GP	VMVS3TW050G241	VMVS3TW050G245	VMVS3TW050R5
	¾	70	VMVS2TW070GP	VMVS2TW070G241	VMVS2TW070G245	VMVS2TW070R5
	1		VMVS3TW070GP	VMVS3TW070G241	VMVS3TW070G245	VMVS3TW070R5
	¾	100	VMVS2TW100GP	VMVS2TW100G241	VMVS2TW100G245	VMVS2TW100R5
	1		VMVS3TW100GP	VMVS3TW100G241	VMVS3TW100G245	VMVS3TW100R5
	¾	150	VMVS2TW150GP	VMVS2TW150G241	VMVS2TW150G245	VMVS2TW150R5
	1		VMVS3TW150GP	VMVS3TW150G241	VMVS3TW150G245	VMVS3TW150R5



Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	50	VMVS25Q050GP	VMVS25Q050G241	VMVS25Q050G245	VMVS25Q050R5
	¾	70	VMVS25Q070GP	VMVS25Q070G241	VMVS25Q070G245	VMVS25Q070R5
	¾	100	VMVS25Q100GP	VMVS25Q100G241	VMVS25Q100G245	VMVS25Q100R5
	¾	150	VMVS25Q150GP	VMVS25Q150G241	VMVS25Q150G245	VMVS25Q150R5



Stanchion Mount 25° Angle	1½	50	VMVSJ050GP	VMVSJ050G241	VMVSJ050G245	VMVSJ050R5
	1½	70	VMVSJ070GP	VMVSJ070G241	VMVSJ070G245	VMVSJ070R5
	1½	100	VMVSJ100GP	VMVSJ100G241	VMVSJ100G245	VMVSJ100R5
	1½	150	VMVSJ150GP	VMVSJ150G241	VMVSJ150G245	VMVSJ150R5



Stanchion Mount Straight	1½	50	VMVSP050GP	VMVSP050G241	VMVSP050G245	VMVSP050R5
	1½	70	VMVSP070GP	VMVSP070G241	VMVSP070G245	VMVSP070R5
	1½	100	VMVSP100GP	VMVSP100G241	VMVSP100G245	VMVSP100R5
	1½	150	VMVSP150GP	VMVSP150G241	VMVSP150G245	VMVSP150R5

† To obtain fixture without guard, omit suffix "P" from Cat. No.
** Available with optional wire guard. Order "P241" wire guard separately.
*** Available with optional wire guard. Order "P23" wire guard separately.

Accessories – see pages 3L-28 and 29 for complete listing.
Ballast Data – see pages 3L-30 and 31 for replacement ballasts.

♦ Suitability of specific fixtures for use in hazardous locations depends upon many factors including the properties of the hazardous substance(s) which may be present, ambient temperatures, lamp type and wattage, etc. Consult Crouse-Hinds field representative or headquarters for further information.

* Class II, Class III, Simultaneous Presence – 50 and 70 watt HPS only.

‡ To substitute IES Type II refractor in place of Type V, change "R5" to "R2" in catalog number. Refractors not suitable for marine applications.

NOTES:
1. Catalog numbers are basic numbers. **Voltage must be specified.**

Voltage	120	208	240	277	480	Multi-Tap
Suffix	/120	/208	/240	/277	/480	/MT

50W HPS fixtures are only available with a 120/277 volt dual-tap ballast. To specify voltage, add suffix DT. (Multi-tap ballasts are pre-wired for 120V.)
2. For 150W HPS fixtures, "LX" or "CE" must be specified. To specify for use with 55V lamp, add suffix "LX." To specify for use with 100V lamp, add suffix "CE."

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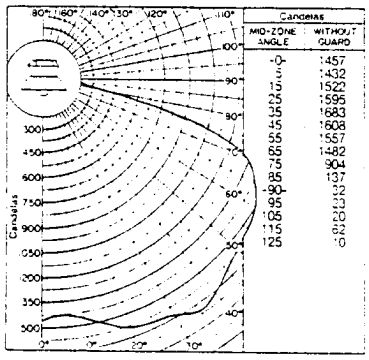
50-175W VMVS Series Champ® H.I.D. Lighting Fixtures Integral Ballast Enclosed & Gasketed Photometric Data

Class I, Division 2, Groups A,B,C,D♦
Class II, Groups E,F,G♦*
Class III♦*
Simultaneous Presence♦*
Wet Locations
Marine Locations

Crouse-Hinds®

Lamp: 100W/E-23½ high pressure sodium (HPS)
Total bare lamp lumens: 9500
To determine number and placement of fixtures, see Lighting Selector Guide, pages L-7 to L-12.
NOTE: All data provided is for high pressure sodium fixtures with 100W/E-23½ clear lamps. Use conversion factors (multipliers) shown below for other clear lamp types and wattages. Consult Crouse-Hinds for additional photometric data on any *Champ* Series fixture.

Fixture with Globe and Dome Reflector



Multipliers (for use with candela curve only).

Fixture Series	Lamp Watts	Conversion Factor
VMVS	50	0.42
	70	0.61
	150	1.68

Luminaire spacing ratio: 1.85

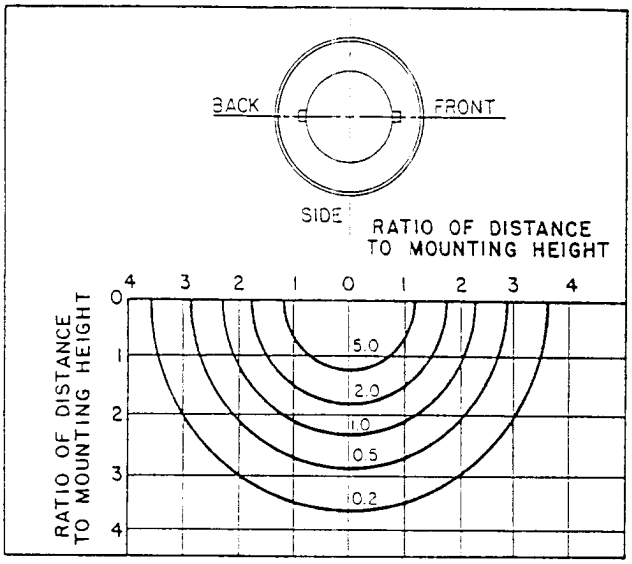
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

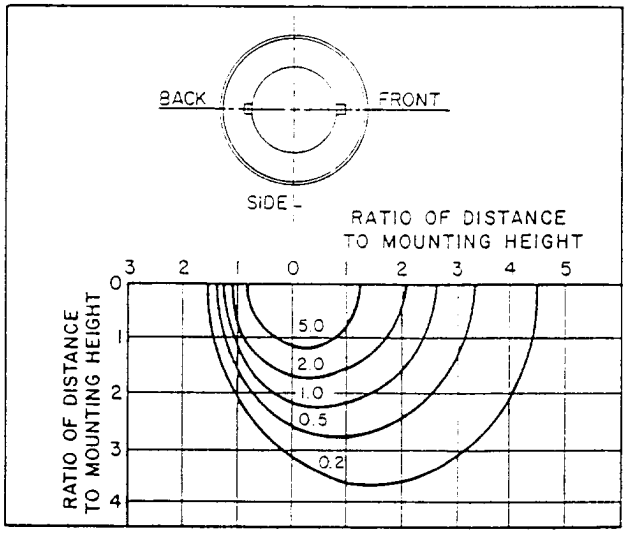
% Reflectance Eff. Ceil	Wall	Room Cavity Ratio 1	2	3	4	5
80	50	.823	.707	.610	.529	.464
	30	.784	.646	.538	.451	.384
	10	.749	.594	.482	.391	.324
70	50	.804	.690	.597	.517	.452
	30	.767	.633	.530	.445	.377
	10	.734	.587	.477	.388	.321
50	50	.765	.658	.571	.494	.434
	30	.735	.611	.513	.431	.368
	10	.709	.569	.466	.381	.318
30	50	.731	.629	.546	.473	.416
	30	.708	.591	.497	.419	.357
	10	.685	.555	.456	.375	.312
10	50	.701	.603	.524	.454	.399
	30	.681	.569	.482	.406	.348
	10	.662	.541	.446	.367	.307
0	0	.644	.521	.427	.348	.288

% Reflectance Eff. Ceil	Wall	Room Cavity Ratio 6	7	8	9	10
80	50	.412	.366	.326	.296	.258
	30	.334	.290	.253	.224	.187
	10	.278	.239	.201	.175	.142
70	50	.403	.359	.320	.291	.252
	30	.329	.285	.250	.221	.187
	10	.274	.235	.200	.174	.142
50	50	.386	.344	.307	.279	.244
	30	.320	.277	.244	.216	.182
	10	.271	.231	.197	.172	.140
30	50	.371	.329	.296	.269	.235
	30	.312	.272	.237	.210	.178
	10	.267	.227	.195	.170	.137
10	50	.357	.319	.285	.260	.227
	30	.304	.266	.232	.206	.173
	10	.263	.224	.192	.167	.135
0	0	.245	.207	.176	.152	.120

Isofootcandle Chart: Fixture with Globe and Dome Reflector



Isofootcandle Chart: Fixture with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
6	2.78	14	0.51
8	1.56	16	0.39
12	0.70		

♦* See page 3L-3.

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111-9

50- 75W V V V Series — Class I, Div. 2, Groups A,B,C,D

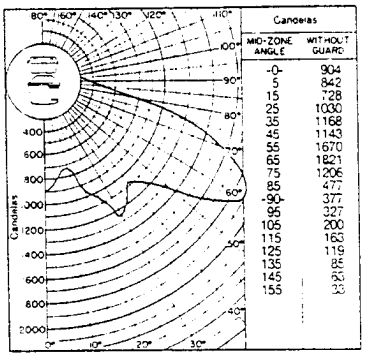
Champ® H.I.D. Lighting Fixtures Integral Ballast Enclosed & Gasketed Photometric Data

Class II, Groups E,F,G♦*
Class III♦*
Simultaneous Presence♦*
Wet Locations
Marine Locations

Crouse-Hinds®

Lamp: 100W/E-23½ high pressure sodium (HPS)
To determine number and placement of fixtures, see Lighting Selector Guide, pages L-7 to L-12.

Fixture with I.E.S. Type V Glass Refractor



NOTE: Photometric data was developed using a 100 watt clear high pressure sodium lamp (9500 lumens). For other clear lamps, use the following conversion factors (multipliers):

Fixture Series	Lamp Watts	Conversion Factor
VMVS	50	0.42
	70	0.61
	150	1.68

Luminaire spacing ratio: 2.0

Coefficient of Utilization

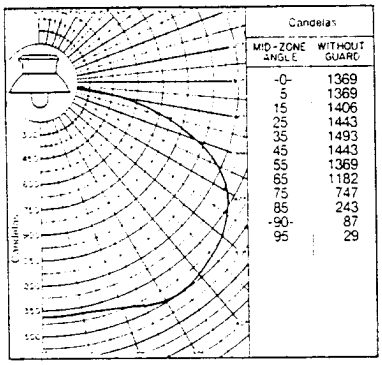
Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.848	.709	.597	.508	.437
80	30	.796	.631	.509	.414	.343
	10	.750	.566	.439	.341	.271
	50	.818	.682	.576	.489	.419
70	30	.770	.611	.493	.402	.331
	10	.726	.552	.428	.334	.264
	50	.759	.632	.533	.451	.389
50	30	.720	.574	.464	.377	.312
	10	.685	.521	.407	.318	.253
	50	.706	.586	.493	.417	.359
30	30	.675	.538	.435	.354	.291
	10	.645	.495	.386	.302	.240
	50	.658	.544	.457	.385	.331
10	30	.632	.504	.408	.331	.274
	10	.608	.469	.366	.286	.227
0	0	.581	.441	.340	.260	.203

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.384	.337	.299	.272	.238
80	30	.292	.249	.214	.189	.159
	10	.226	.189	.154	.132	.103
	50	.369	.325	.288	.262	.229
70	30	.283	.240	.203	.183	.156
	10	.218	.182	.150	.130	.105
	50	.341	.301	.266	.243	.214
50	30	.266	.225	.195	.173	.146
	10	.209	.173	.143	.124	.099
	50	.316	.277	.248	.225	.198
30	30	.249	.213	.182	.161	.136
	10	.199	.163	.136	.117	.093
	50	.292	.258	.223	.209	.134
10	30	.233	.200	.171	.151	.127
	10	.188	.154	.128	.110	.087
0	0	.165	.133	.108	.091	.070

Lamp: 175W/E-28 mercury vapor (MV)
To determine number and placement of fixtures, see Lighting Selector Guide, pages L-7 to L-12.

Fixture with Globe and Dome Reflector



NOTE: Photometric data was developed using a 175 watt diffuse mercury vapor lamp (8600 lumens). For other diffuse lamps, use the following conversion factors (multipliers):

Fixture Series	Lamp Watts	Conversion Factor
VMVC	100	0.49
VMVM	70	0.65
	100	0.91
	175	1.63

Luminaire spacing ratio: 1.60

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.793	.682	.591	.515	.453
80	30	.753	.623	.522	.440	.376
	10	.718	.572	.468	.382	.319
	50	.775	.667	.580	.505	.442
70	30	.738	.611	.514	.435	.370
	10	.705	.566	.463	.379	.316
	50	.739	.637	.555	.483	.426
50	30	.709	.591	.498	.422	.362
	10	.682	.550	.454	.374	.313
	50	.707	.611	.532	.484	.409
30	30	.683	.572	.485	.411	.352
	10	.660	.537	.445	.388	.309
	50	.679	.588	.512	.446	.394
10	30	.658	.553	.471	.400	.345
	10	.639	.525	.436	.362	.304
0	0	.622	.506	.418	.343	.287

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.403	.359	.320	.291	.253
80	30	.328	.285	.250	.221	.185
	10	.275	.236	.199	.174	.142
	50	.395	.352	.314	.286	.248
70	30	.324	.281	.247	.219	.185
	10	.271	.233	.198	.174	.142
	50	.379	.339	.303	.276	.241
50	30	.316	.274	.241	.215	.181
	10	.298	.230	.196	.172	.140
	50	.366	.325	.293	.266	.233
30	30	.309	.268	.235	.209	.177
	10	.265	.226	.195	.170	.138
	50	.353	.318	.282	.257	.225
10	30	.301	.264	.231	.208	.179
	10	.282	.224	.193	.168	.136
0	0	.245	.208	.177	.153	.122

♦* See page 3L-3.

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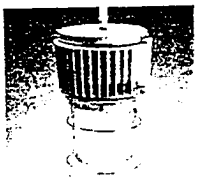
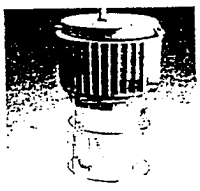
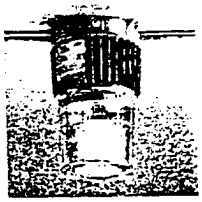
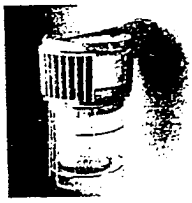
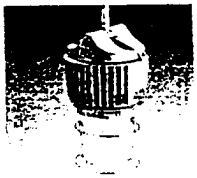
100-250W DMV Series Champ® H.I.D. Lighting Fixtures

Integral Ballast
Enclosed & Gasketed

Class I, Div. 2, Groups A,B,C,D♦
Class II, Groups E,F,G♦*
Class III♦*
Simultaneous Presence♦*
Wet Locations
Marine Locations

Crouse-Hinds®

Mercury Vapor High Power Factor Ballast (Min. P.F. 90%) – See Note 1 (to specify voltage)

	Mounting Style	Hub Size	Lamp Watts[2]	With G303 Globe and P33 Guard Cat. No.†	With R54 Glass Refractor Cat. No.††
	Pendant Mount	¾	100	DMVC2A100GP	DMVC2A100R54
		1		DMVC3A100GP	DMVC3A100R54
		¾	175	DMVC2A175GP	DMVC2A175R54
		1		DMVC3A175GP	DMVC3A175R54
		¾	250*	DMVC2A250GP	DMVC2A250R54
		1		DMVC3A250GP	DMVC3A250R54
	Flexible Pendant Mount	¾	100	DMVC2HA100GP	DMVC2HA100R54
		¾	175	DMVC2HA175GP	DMVC2HA175R54
		¾	250*	DMVC2HA250GP	DMVC2HA250R54
	Ceiling Mount Thru-Feed	¾	100	DMVC2C100GP	DMVC2C100R54
		1		DMVC3C100GP	DMVC3C100R54
		¾	175	DMVC2C175GP	DMVC2C175R54
		1		DMVC3C175GP	DMVC3C175R54
		¾	250*	DMVC2C250GP	DMVC2C250R54
		1		DMVC3C250GP	DMVC3C250R54
	Wall Mount Thru-Feed	¾	100	DMVC2TW100GP	DMVC2TW100R54
		1		DMVC3TW100GP	DMVC3TW100R54
		¾	175	DMVC2TW175GP	DMVC2TW175R54
		1		DMVC3TW175GP	DMVC3TW175R54
		¾	250*	DMVC2TW250GP	DMVC2TW250R54
		1		DMVC3TW250GP	DMVC3TW250R54
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	100	DMVC25Q100GP	DMVC25Q100R54
		¾	175	DMVC25Q175GP	DMVC25Q175R54
		¾	250*	DMVC25Q250GP	DMVC25Q250R54
	Stanchion Mount 25° Angle	1½	100	DMVCJ100GP	DMVCJ100R54
		1½	175	DMVCJ175GP	DMVCJ175R54
		1½	250*	DMVCJ250GP	DMVCJ250R54
	Stanchion Mount Straight	1½	100	DMVCP100GP	DMVCP100R54
		1½	175	DMVCP175GP	DMVCP175R54
		1½	250*	DMVCP250GP	DMVCP250R54

NOTES:
1. Catalog numbers are basic numbers. Voltage must be specified.

Voltage	120	208	240	277	480	Multi-Tap
Suffix	/120	/208	/240	/277	/480	/MT

(Multi-tap ballasts are pre-wired for 120V).

2. 250 watt fixtures not suitable for Class II, III, or Simultaneous Presence (Class I, Division 2/Class II, Division 1).

† To obtain fixture without guard, omit suffix "P" from Cat. No.

†† Order as complete fixture only. To substitute IES Type II refractor in place of Type V, change "R54" to "R24" in catalog number.

Accessories – see pages 3L-28 and 29 for complete listing.
Ballast Data – see pages 3L-30 for replacement ballasts.

♦ Suitability of specific fixtures for use in hazardous locations depends upon many factors including the properties of the hazardous substance(s) which may be present, ambient temperatures, lamp type and wattage, etc. Consult Crouse-Hinds field representative or headquarters for further information.

* 250 watt fixtures for use in Class I, Division 2 and non-hazardous applications only.

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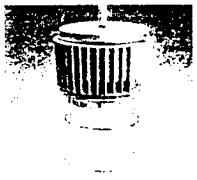
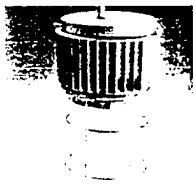
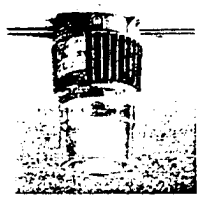
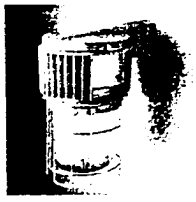
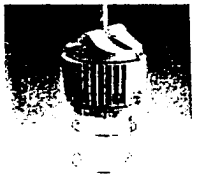
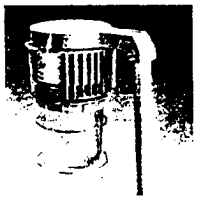
70-250W DMV Series Champ® H.I.D. Lighting Fixtures

Class I, Division 2, Groups A,B,C,D♦
Class II, Groups E,F,G♦*
Class III♦*
Simultaneous Presence♦*
Wet Locations
Marine Locations

Integral Ballast
Enclosed & Gasketed

Crouse-Hinds®

Metal Halide High Power Factor Ballast (Min. P.F. 90%) – See Note 1 (to specify voltage)

	Mounting Style	Hub Size	Lamp Watts[2]	With G303 Globe and P33 Guard Cat. No.†	With R54 Glass Refractor Cat. No.††
	Pendant Mount	¾	70	DMVM2A070GP	DMVM2A070R54
		1		DMVM3A070GP	DMVM3A070R54
		¾	100	DMVM2A100GP	DMVM2A100R54
		1		DMVM3A100GP	DMVM3A100R54
		¾	175	DMVM2A175GP	DMVM2A175R54
		1		DMVM3A175GP	DMVM3A175R54
		¾	250*	DMVM2A250GP	DMVM2A250R54
		1		DMVM3A250GP	DMVM3A250R54
	Flexible Pendant Mount	¾	70	DMVM2HA070GP	DMVM2HA070R54
		¾	100	DMVM2HA100GP	DMVM2HA100R54
		¾	175	DMVM2HA175GP	DMVM2HA175R54
		¾	250*	DMVM2HA250GP	DMVM2HA250R54
	Ceiling Mount Thru-Feed	¾	70	DMVM2C070GP	DMVM2C070R54
		1		DMVM3C070GP	DMVM3C070R54
		¾	100	DMVM2C100GP	DMVM2C100R54
		1		DMVM3C100GP	DMVM3C100R54
		¾	175	DMVM2C175GP	DMVM2C175R54
		1		DMVM3C175GP	DMVM3C175R54
		¾	250*	DMVM2C250GP	DMVM2C250R54
		1		DMVM3C250GP	DMVM3C250R54
	Wall Mount Thru-Feed	¾	70	DMVM2TW070GP	DMVM2TW070R54
		1		DMVM3TW070GP	DMVM3TW070R54
		¾	100	DMVM2TW100GP	DMVM2TW100R54
		1		DMVM3TW100GP	DMVM3TW100R54
		¾	175	DMVM2TW175GP	DMVM2TW175R54
		1		DMVM3TW175GP	DMVM3TW175R54
		¾	250*	DMVM2TW250GP	DMVM2TW250R54
		1		DMVM3TW250GP	DMVM3TW250R54
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	70	DMVM25Q070GP	DMVM25Q070R54
		¾	100	DMVM25Q100GP	DMVM25Q100R54
		¾	175	DMVM25Q175GP	DMVM25Q175R54
		¾	250*	DMVM25Q250GP	DMVM25Q250R54
	Stanchion Mount 25° Angle	1½	70	DMVMJ070GP	DMVMJ070R54
		1½	100	DMVMJ100GP	DMVMJ100R54
		1½	175	DMVMJ175GP	DMVMJ175R54
		1½	250*	DMVMJ250GP	DMVMJ250R54
	Stanchion Mount Straight	1½	70	DMVMP070GP	DMVMP070R54
		1½	100	DMVMP100GP	DMVMP100R54
		1½	175	DMVMP175GP	DMVMP175R54
		1½	250*	DMVMP250GP	DMVMP250R54

NOTES.
1. Catalog numbers are basic numbers. **Voltage must be specified.** Voltage 120 208 240 277 480 Multi-Tap Suffix /120 /208 /240 /277 /480 /MT (Multi-Tap ballasts are prewired for 120V). 70,100 watt metal halide available with Multi-Tap (MT) ballast only.

2. 250 watt fixtures not suitable for Class II, III, or Simultaneous Presence (Class I, Division 2/Class II, Division 1).

Accessories – see pages 3L-28 and 29 for complete listing.

Ballast Data – see pages 3L-31 for replacement ballasts.

† To obtain fixture without guard, omit suffix "P" from Cat. No.

†† Order as complete fixture only. To substitute IES Type II refractor in place of Type V, change "R54" to "R24" in catalog number.

♦ Suitability of specific fixtures for use in hazardous locations depends upon many factors including the properties of the hazardous substance(s) which may be present, ambient temperatures, lamp type and wattage, etc. Consult Crouse-Hinds field representative or headquarters for further information.

* 250 watt fixtures for use in Class I, Division 2 and non-hazardous applications only.

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50-250W DMV Series Champ® H.I.D. Lighting Fixtures Integral Ballast Enclosed & Gasketed

Crouse-Hinds® Photometric Data

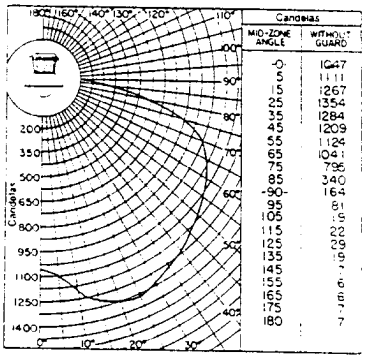
Class I, Div. 2, Groups A,B,C,D♦
Class II, Groups E,F,G♦*
Class III♦*
Simultaneous Presence♦*
Wet Locations
Marine Locations

Lamp: 175W/E-28 coated mercury vapor (MV)
Total bare lamp lumens: 8600

To determine number and placement of fixtures, see Lighting Selector Guide, pages L-7 to L-12.

NOTE: All data provided is for mercury vapor fixtures with 175W/E-28 diffuse lamps. Use conversion factors (multipliers) shown below for other diffuse lamp types and wattages. Consult Crouse-Hinds for additional photometric data on any *Champ* series fixture.

Fixture with Globe and Dome Reflector



Multipliers: (for use with candela curves only)

Fixture Series	Lamp Watts	Conversion Factor
DMVC	100	0.49
	250	1.41
DMVM	175	1.63
	250	2.38

Luminaire spacing ratio: 1.7

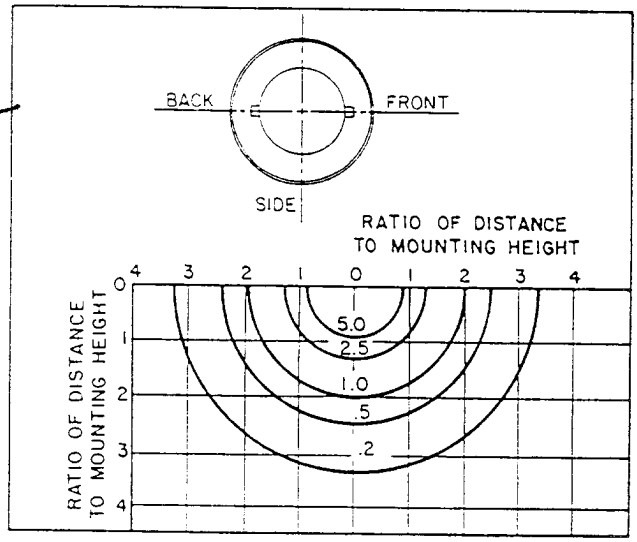
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

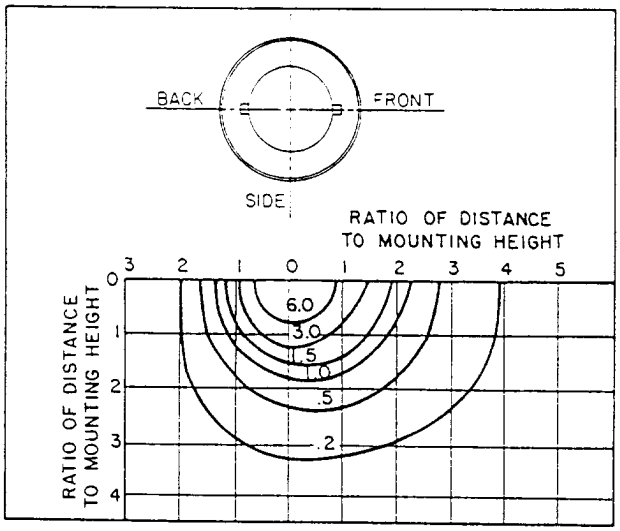
% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
	50	.723	.619	.536	.467	.412
80	30	.684	.561	.470	.396	.340
	10	.649	.512	.417	.342	.286
	50	.705	.604	.524	.456	.401
70	30	.668	.549	.461	.390	.334
	10	.635	.505	.412	.338	.283
	50	.668	.572	.498	.434	.384
50	30	.638	.528	.445	.377	.324
	10	.611	.488	.401	.331	.279
	50	.635	.545	.474	.414	.366
30	30	.611	.508	.429	.365	.314
	10	.588	.474	.391	.324	.273
	50	.606	.519	.453	.395	.350
10	30	.585	.488	.414	.352	.305
	10	.566	.460	.381	.317	.268
0	0	.549	.442	.363	.299	.251

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
	50	.368	.329	.294	.269	.234
80	30	.298	.261	.229	.204	.172
	10	.248	.215	.182	.160	.131
	50	.359	.322	.289	.263	.229
70	30	.293	.256	.226	.201	.171
	10	.244	.211	.181	.159	.131
	50	.343	.308	.276	.252	.221
50	30	.284	.248	.220	.196	.166
	10	.240	.207	.178	.157	.128
	50	.329	.294	.266	.243	.212
30	30	.276	.243	.213	.190	.162
	10	.236	.203	.176	.154	.126
	50	.315	.284	.255	.233	.205
10	30	.268	.236	.208	.186	.157
	10	.231	.200	.173	.151	.123
0	0	.216	.184	.158	.138	.110

Isofootcandle Chart: Fixture with Globe and Dome Reflector



Isofootcandle Chart: Fixture with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
8	1.56	16	.391
12	.694	20	.250
14	.510		

♦* See page 3L-18.

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FVN Series Fluorescent Industrial Lighting Fixtures Enclosed & Gasketed

Class I, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G
Class III
Wet Locations
Simultaneous Presence
Photometric Data Pg. 5L-8

Crouse-Hinds®

Applications:

FVN fixtures are used:
- in areas made hazardous by abnormal conditions resulting in the presence of flammable vapors or gases and combustible dusts as defined by the National Electrical Code®
- where broken lamps would damage machinery or processes, or harm people working in the area
- in areas where stringent sanitation requirements exist

Features:

- Energy efficient ballast is standard.
- One-piece seamless sheet steel housing with welded end caps keeps dirt, dust and moisture away from ballast and lamps. Easy to clean.
- A silicone rubber gasket provides a dust-tight seal between the lens/frame assembly and housing.
- Polyester powder coat finish provides high reflectance and corrosion resistance for long life and dependable service
- Lens and frame assembly is hinged and wireway cover is held by safety chain, for ease of lamp replacement and maintenance

Standard Materials:

- Reflector housing – 20-gauge seamless sheet steel
- Lens and frame assembly – stainless steel
- Glass – tempered
- Suspension flanges – seamless sheet steel
- Gaskets – silicone
- Lampholders – white thermoset plastic
- Clamps – stainless steel

Standard Finishes:

- Reflector housings – corrosion-resistant white polyester powder coat
- Lens frame – natural

Size Ranges:

- All fixtures are 53" L × 14¾" W × 7" H
- End connectors and suspension flanges are ½"
- Glass is 3/16" tempered

Electrical Ratings:

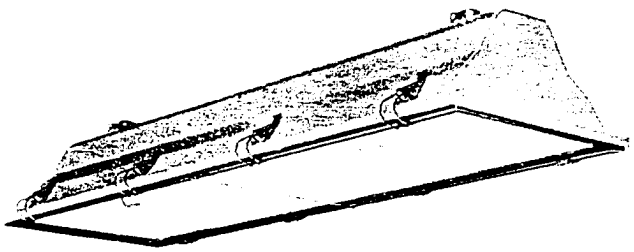
- 120 and 277V, 60 hertz
- 40 and 60W

Compliances:

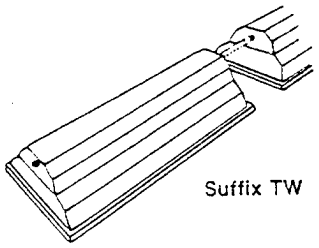
- UL and CSA (ETL) approved ballasts
- NEC: Class I Division 2, Groups A,B,C,D. Class II, Groups E,F,G Class III Simultaneous Presence
- UL Standard 1570, 844

Options:

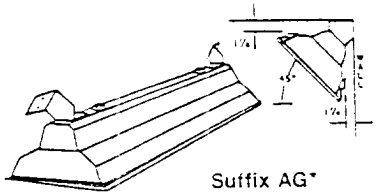
- The following special options are available from the factory by adding suffix to fixture Cat. No.



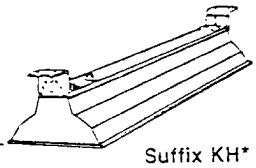
Description	Suffix to be Added to Fixture Cat. #
Low temperature ballast, 40W rated 0°F, 60W rated –20°F	BY
One end connector installed for single end wiring	DE††
Two end connectors installed for through feed wiring	TW††
45° angle brackets (field installed)	AG*
Adjustable angle brackets (field installed)	KH*
Angle bars for chain suspension (field installed)	CX*
Individually fused ballast (internal)	FB
220 volt/50 hertz ballast	Consult Crouse-Hinds
Emergency lighting battery unit	S799



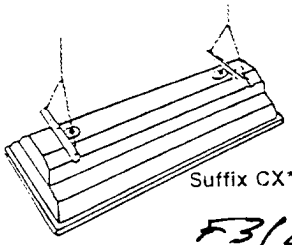
Suffix TW



Suffix AG*



Suffix KH*



Suffix CX*

F212

F312

Line Voltage (60 Hertz)	Watts	Type of Glass	2-Lamp Cat. #§	3-Lamp Cat. #§
120	40	Tempered	FVN4240TG	FVN4340TG
	60	Tempered	FVN4260TG	
277	40	Tempered	FVN4240TG/277	FVN4340TG/277
	60	Tempered	FVN4260TG/277	

Temperature Performance Data: (Based on 40°C Ambient)

Lamp Type	Class I Div. 2 2-Lamp	Class I Div. 2 3-Lamp	Class II 2-Lamp	Class II 3-Lamp	Simultaneous Presence 2-Lamp	Simultaneous Presence 3-Lamp
40W	T5	T4A	T6	T6	T5	T4
60W	T4	—	T6	—	T4	—

Lamps and Ballasts

Wattage	Bulb	Lamp & Ballast Type†
40	T-12 (Med Bi-Pin)	430ma
60	T-12 (Recessed Double Contact)	800ma, HO

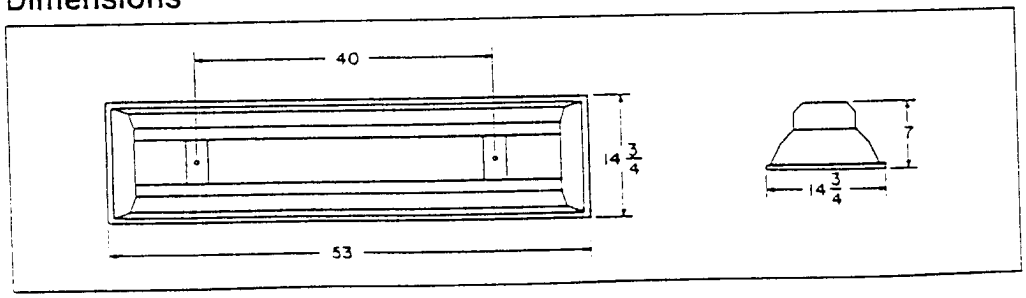
§ Lamps are not furnished with fixtures

† Ballasts for all fixtures are rapid start Class P type.

* Can be used with DE and TW options.

†† When ordering with DE or TW suffix, add mounting method desired such as AG, KH, or CX.

Dimensions



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F212

Crouse-Hinds®

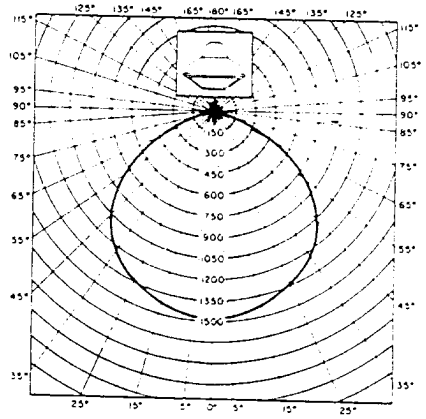
FVN Series Fluorescent Industrial Lighting Fixtures

F312

Photometric Data

Fixture: FVN with 2-40W lamps (tempered lens)

Lamp: 2-40/T-12
Zonal Degrees: 0-30 0-40 0-60 0-90
Zonal Lumens: 1182 1971 3555 4284
Total Bare Lamp Lumens: 6300
To determine number and placement of fixtures, see Lighting Selector Guide, pages L-7 to L-12.



NOTE: All data provided is for 2-lamp 40W RS cool white fixtures with tempered glass. Use 1.37 multiplier for 2-lamp 60W fixtures with tempered glass.

Coefficient of Utilization

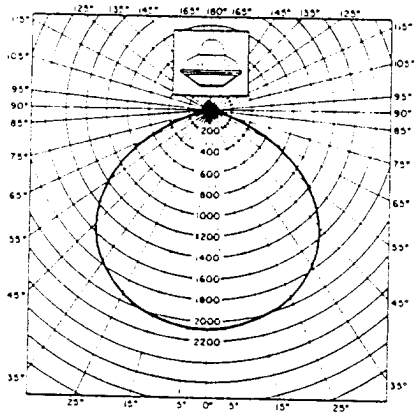
Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
80	50	.721	.643	.575	.513	.461
	30	.695	.603	.527	.459	.404
	10	.673	.569	.489	.418	.362
70	50	.706	.631	.566	.505	.452
	30	.683	.594	.520	.455	.399
	10	.661	.564	.485	.415	.359
50	50	.677	.607	.547	.488	.439
	30	.657	.577	.508	.444	.392
	10	.641	.549	.476	.410	.357
30	50	.650	.586	.528	.473	.426
	30	.636	.561	.496	.435	.384
	10	.621	.538	.468	.405	.353
10	50	.627	.568	.512	.459	.414
	30	.614	.544	.484	.426	.378
	10	.602	.526	.460	.399	.349
0	0	.589	.512	.447	.385	.336

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
80	50	.416	.375	.338	.309	.269
	30	.359	.319	.283	.254	.215
	10	.319	.281	.244	.217	.180
70	50	.409	.370	.333	.305	.265
	30	.356	.315	.281	.252	.215
	10	.316	.278	.244	.217	.180
50	50	.397	.359	.324	.297	.259
	30	.350	.309	.277	.249	.211
	10	.314	.276	.242	.215	.179
30	50	.386	.348	.316	.289	.253
	30	.344	.306	.272	.244	.208
	10	.311	.273	.240	.214	.177
10	50	.376	.341	.308	.282	.247
	30	.338	.301	.268	.242	.205
	10	.308	.271	.239	.212	.175
0	0	.295	.258	.226	.200	.164

Fixture: FVN with 3-40W lamps (tempered lens)

Lamp: 3-40/T-12
Zonal Degrees: 0-30 0-40 0-60 0-90
Zonal Lumens: 1695 2834 5099 6079
Total Bare Lamp Lumens: 9450
To determine number and placement of fixtures, see Lighting Selector Guide, pages L-7 to L-12



NOTE: All data provided is for 3-lamp 40W RS cool white fixtures with tempered glass. Use 1.37 multiplier for 3-lamp 60W fixtures with tempered glass.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 1	2	3	4	5
80	50	.682	.610	.546	.488	.439
	30	.658	.572	.501	.438	.385
	10	.637	.540	.466	.399	.346
70	50	.668	.599	.538	.480	.430
	30	.646	.563	.495	.433	.381
	10	.625	.535	.462	.396	.343
50	50	.640	.576	.520	.464	.418
	30	.622	.547	.454	.423	.374
	10	.606	.521	.433	.391	.341
30	50	.615	.556	.502	.450	.406
	30	.601	.532	.472	.415	.367
	10	.587	.511	.446	.386	.337
10	50	.594	.537	.487	.437	.394
	30	.581	.517	.461	.406	.361
	10	.570	.499	.439	.381	.333
0	0	.557	.487	.426	.368	.321

% Reflectance Eff. Ceil.	Wall	Room Cavity Ratio 6	7	8	9	10
80	50	.396	.357	.322	.294	.256
	30	.343	.304	.270	.242	.205
	10	.305	.268	.234	.207	.172
70	50	.390	.352	.317	.290	.252
	30	.340	.301	.268	.240	.205
	10	.302	.266	.233	.207	.172
50	50	.378	.342	.309	.282	.247
	30	.334	.295	.264	.237	.201
	10	.300	.264	.231	.206	.171
30	50	.368	.332	.301	.276	.241
	30	.328	.292	.259	.233	.199
	10	.298	.261	.230	.204	.169
10	50	.358	.325	.294	.269	.235
	30	.322	.288	.256	.231	.196
	10	.294	.259	.228	.202	.168
0	0	.283	.247	.217	.192	.157

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FVN Series Fluorescent Industrial Lighting Fixtures Enclosed & Gasketed

Class I, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G
Class III
Wet Locations
Simultaneous Presence
Photometric Data Pg. 5L-8

Crouse-Hinds®

Applications:

FVN fixtures are used:
- in areas made hazardous by abnormal conditions resulting in the presence of flammable vapors or gases and combustible dusts as defined by the National Electrical Code®
- where broken lamps would damage machinery or processes, or harm people working in the area
- in areas where stringent sanitation requirements exist

Features:

- Energy efficient ballast is standard.
- One-piece seamless sheet steel housing with welded end caps keeps dirt, dust and moisture away from ballast and lamps. Easy to clean.
- A silicone rubber gasket provides a dust-tight seal between the lens/frame assembly and housing.
- Polyester powder coat finish provides high reflectance and corrosion resistance for long life and dependable service
- Lens and frame assembly is hinged and wireway cover is held by safety chain, for ease of lamp replacement and maintenance

Standard Materials:

- Reflector housing – 20-gauge seamless sheet steel
- Lens and frame assembly – stainless steel
- Glass – tempered
- Suspension flanges – seamless sheet steel
- Gaskets – silicone
- Lampholders – white thermoset plastic
- Clamps – stainless steel

Standard Finishes:

- Reflector housings – corrosion-resistant white polyester powder coat
- Lens frame – natural

Size Ranges:

- All fixtures are 53" L × 14¾" W × 7" H
- End connectors and suspension flanges are ½"
- Glass is 3/16" tempered

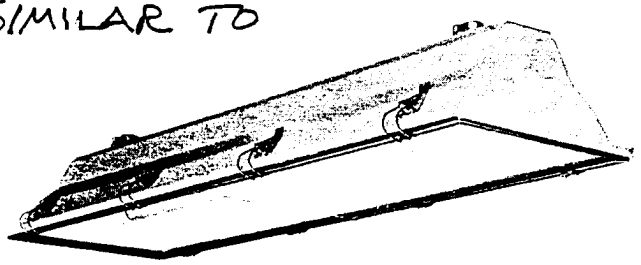
Electrical Ratings:

- 120 and 277V, 60 hertz
- 40 and 60W

Compliances:

- UL and CSA (ETL) approved ballasts
- NEC: Class I, Division 2, Groups A,B,C,D, Class II, Groups E,F,G Class III Simultaneous Presence
- UL Standard: 1570, 844

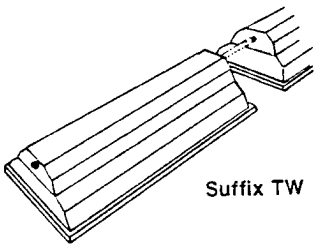
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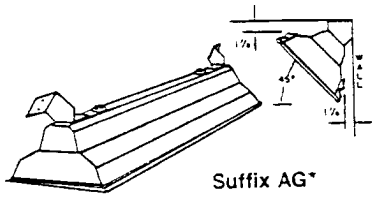
Options:

- The following special options are available from the factory by adding suffix to fixture Cat. No.

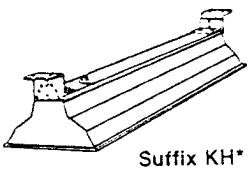
Description	Suffix to be Added to Fixture Cat. #
Low temperature ballast, 40W rated 0°F, 60W rated –20°F	BY
One end connector installed for single end wiring	DE††
Two end connectors installed for through feed wiring	TW††
45° angle brackets (field installed)	AG*
Adjustable angle brackets (field installed)	KH*
Angle bars for chain suspension (field installed)	CX*
Individually fused ballast (internal)	FB
220 volt/50 hertz ballast	Consult Crouse-Hinds
Emergency lighting battery unit	S799



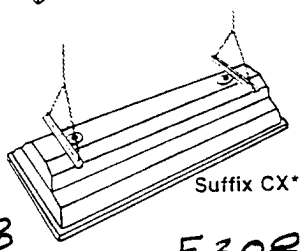
Suffix TW



Suffix AG*



Suffix KH*



Suffix CX*

F20B

F30B

Line Voltage (60 Hertz)	Watts	Type of Glass	2-Lamp Cat. #§	3-Lamp Cat. #§
120	40	Tempered	FVN4240TG	FVN4340TG
	60	Tempered	FVN4260TG	
277	40	Tempered	FVN4240TG/277	FVN4340TG/277
	60	Tempered	FVN4260TG/277	

Temperature Performance Data: (Based on 40°C Ambient)

Lamp Type	Class I Div. 2 2-Lamp	Class I Div. 2 3-Lamp	Class II 2-Lamp	Class II 3-Lamp	Simultaneous Presence 2-Lamp	Simultaneous Presence 3-Lamp
40W	T5	T4A	T6	T6	T5	T4
60W	T4	—	T6	—	T4	—

Lamps and Ballasts

Wattage	Bulb	Lamp & Ballast Type†
40	T-12 (Med Bi-Pin)	430ma
60	T-12 (Recessed Double Contact)	800ma, HO

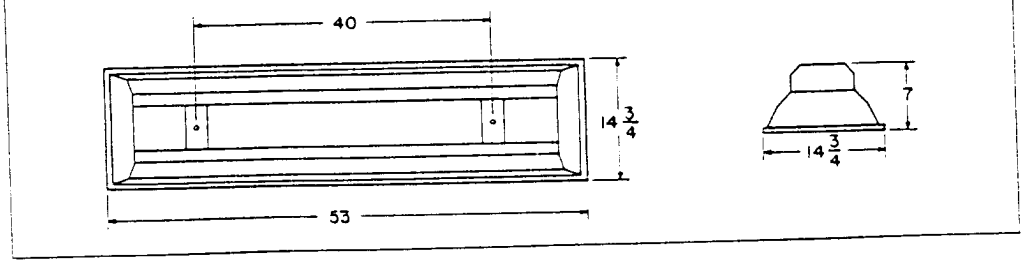
§ Lamps are not furnished with fixtures

† Ballasts for all fixtures are rapid start Class P type.

* Can be used with DE and TW options.

†† When ordering with DE or TW suffix, add mounting method desired such as AG, KH, or CX.

Dimensions



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111-16

Lamp Data

A21, A23 Bulb Shapes

Wattage Range: 50 - 250 (Includes 3-Way Lamps)

I 100

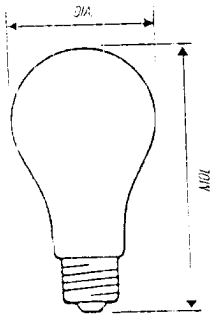


Fig. 1

Watts	Order Code	Description	Volts	Case Quantity	Filament Design	MOL in. (mm)	Average Initial Lumens	Additional Information
A21 3-Way Diameter 2 5/8 " (67 mm) – 3-Contact Medium (E26d) Base								
50-135-185	13432	50/185 12PK	120	60	CC6 CC8	5		Miser 3-Way (25,46)
50-200-250	19445	50/250 12PK	120	60	CC6 CC25	5		Soft White, 3-Way (1,25,46)
A23 Diameter 2 7/8 " (73 mm) – Medium (E26/24) Base Fig.								
100	33454	100A23 VS 24PK	120	120	CC8	5		I.F.–Vibration Service (12)
100	33456	100A23 VS 24PK	130	120	CC8	5		I.F.–Vibration Service (12)
100	18487	100A/D	120	120	CC6	5		I.F.–Daylight
100	18502	100A/SBIF	120	120	CC6	5		I.F.–Silvered Bowl (28)
100	18599	100A/B	120	120	CC6	5		Blue (46)
100	18610	100A/G	120	120	CC6	5		Green (46)
100	18632	100A/R	120	120	CC6	5		Red (46)
100	18449	100A23	120	120	CC6	5		Inside Frost
100	18542	100A23/20	120	120	CC6	5		Clear–Commercial Oven (BBF)[3] (3)
100	18512	100A23	12	120	C6	5		Inside Frost (53)
100	17904	100A	34	120	C8	5		I.F.–Train (53)
100	17905	100A/BB	34	120	C8	5		I.F.–Train (BBF)[3] (53)
150	19080	150A23	120	60	CC8	6		Inside Frost
150	19082	150A23	130	60	CC8	6		Inside Frost
150	19204	150A23/99	120	60	CC8	6		I.F.–Extended Service (BBF)[3]
150	19206	150A23/99	130	60	CC8	6		I.F.–Extended Service (BBF)[3]
170	15842	170A/RL/SW 6PK	120	30	CC8	5		Soft White–Reader Light™
200	20049	200A/CL	120	60	CC8	6		Clear
200	20051	200A/CL	130	60	CC8	6		Clear
200	20028	200A	120	60	CC8	6		Inside Frost
200	20019	200A 12PK	120	60	CC8	6		Standard
200	20030	200A	130	60	CC8	6		Inside Frost
200	20076	200A/99	120	60	CC8	6		I.F.–Extended Service (BBF)[3]
200	20078	200A/99	130	60	CC8	6		I.F.–Extended Service (BBF)[3]
200	20081	200A/99CL	130	60	CC8	6		Clear–Extended Service (BBF)[3]
250	15843	250A/RL/SW 6PK	120	30	CC8	5		Soft White–Reader Light™ (1)
A23 3-Way Diameter 2 7/8 " (73 mm) – 3-Contact Medium (E26d) Base Fig. 1								
80-170-250	15846	80/250A/RL/SW 6PK	120	30	C2R CC8	5	1000 2200 3500	Soft White–Reader Light™ 3-way (1) (25) (46)

111-18

PS30 Bulb Shape
Wattages: 150, 200, 300

I 200

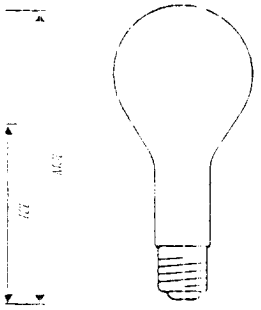


Fig. 1

Watts	Order Code	Description	Volts	Case Quantity	Filament Design	MOL in. (mm)	NOL in. (mm)	Average Initial Lumens	Additional Information
PS30 Diameter 3 3/4 " (95 mm) – Medium (E26/24) Base Fig. 1									
150	19756	150PS30	230-250	60	C-9	8 1/2			Clear–Reflector, Silvered Neck (43.95) (BB)[3]
200	20170	200	120	60	C-9	8 1/2			Clear
200	20171	200	125	60	C-9	8 1/2			Clear
200	20172	200	130	60	C-9	8 1/2			Clear
200	14636	200PS30/CVG	120	60	C-9	8 1/2			Inside Frost–COV-R-GUARD™ (63.95) (BB)[3] Teflon[54] Coated
200	20250	200/IF	120	60	C-9	8 1/2			Inside Frost
200	20252	200/IF	130	60	C-9	8 1/2			Inside Frost
200	20341	200/99	120	60	C-9	8 1/2			Clear–Extended Service (BB)[3]
200	20343	200/99	130	60	C-9	8 1/2			Clear–Extended Service (BB)[3]
200	20352	200/99IF	120	60	C-9	8 1/2			I.F.–Extended Service (BB)[3]
200	20354	200/99IF	130	60	C-9	8 1/2			I.F.–Extended Service (BB)[3]
200	33466	200PS30/23 24PK	120	24	C-9	8 1/2			I.F.–Rough Service (95)
200	33468	200PS30/23 24PK	130	24	C-9	8 1/2			I.F.–Rough Service (95)
200	14637	200PS30/RS/CVG	120	60	C-9	8 1/2			Inside Frost–COV-R-GUARD™ Rough Service (63.95) (BB)[3] Teflon[54] Coated
200	20401	200PS30/24	120	60	C-9	8 1/2 (204.8)	6 (152.4)	3000	Clear–Rough Service (95)
200	20403	200PS30/24	130	60	C-9	8 1/2 (204.8)	6 (152.4)	3000	Clear–Rough Service (95)
200	20316	200/SBIF	120	60	C-9	8 1/2 (204.8)	6 (152.4)	2850	I.F.–Silvered Bowl (28)
200	20318	200/SBIF	130	60	C-9	8 1/2 (204.8)	6 (152.4)	2850	I.F.–Silvered Bowl (28)
200	20192	200	250	60	C-9	8 1/2 (204.8)	6 (152.4)	3000	Clear
200	20283	200/IF	250	60	C-9	8 1/2 (204.8)	6 (152.4)	2700	Inside Frost
200	20201	200	300	60	C-9	8 1/2 (204.8)	6 (152.4)	3000	Clear
200	20348	200/99	230	60	C-9	8 1/2 (204.8)	6 (152.4)	2850	Clear–Extended Service (43) (BB)[3]
200	20349	200/99/IF	230	60	C-9	8 1/2 (204.8)	6 (152.4)	2550	I.F.–Extended Service (43) (BB)[3]
200	20468	200PS30/RS	250	60	C-9	8 1/2 (204.8)	6 (152.4)	2850	Clear–Rough Service (43.95)
300	20885	300M/99	120	60	C-9	8 1/2 (204.8)	6 (152.4)	5250	5700 Clear–Extended Service (BB)[3]
300	20887	300M/99	130	60	C-9	8 1/2 (204.8)	6 (152.4)	5250	5700 Clear–Extended Service (BB)[3]
300	20892	300M/99/IF	120	60	C-9	8 1/2 (204.8)	6 (152.4)	4550	5100 I.F.–Extended Service (BB)[3]
300	20894	300M/99/IF	130	60	C-9	8 1/2 (204.8)	6 (152.4)	4550	5100 I.F.–Extended Service (BB)[3]
300	20942	300M/PS30/IF	120	60	C-9	8 1/2 (204.8)	6 (152.4)	50	5110 Inside Frost
300	20944	300M/PS30/IF	130	60	C-9	8 1/2 (204.8)	6 (152.4)	50	5110 Inside Frost
PS30 Diameter 3 3/4 " (95 mm) – Mogul (E39) Base Fig. 2									
200	20424	200PS30/12	120	60	C-9	8 1/2 (214.3)	6 3/8 (161.9)	50	- Clear
200	20426	200PS30/12	130	60	C-9	8 1/2 (214.3)	6 3/8 (161.9)	50	- Clear

111-19

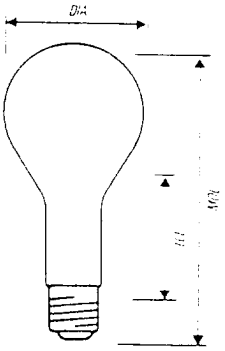


Fig. 1

PS35, PS40 Bulb Shapes
Wattages: 300, 500

I 300

Watts	Order Code	Description	Volts	Case Quantity	Filament Design	MOL in. (mm)	LCL in. (mm)	Rated Average Life Hours	Average Initial Lumens	Additional Information
PS35	**Diameter 4 3/8 " (111 mm) – Mogul (E39) Base** Fig. 1									
300	21023	300	120	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	5820	Clear
300	21025	300	130	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	5820	Clear
300	21077	300/IF	120	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	5820	Inside Frost
300	21079	300 IF	130	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	5820	Inside Frost
300	21165	300 99	120	24	C-9	9-1/4 (235.1)	7 (177.8)	2500	5190	Clear–Extended Service
300	21167	300 99	130	24	C-9	9-1/4 (235.1)	7 (177.8)	2500	5190	Clear–Extended Service
300	21175	300 99IF	120	24	C-9	9-1/4 (235.1)	7 (177.8)	2500	5190	IF–Extended Service (BB)[23]
300	21177	300 99IF	130	24	C-9	9-1/4 (235.1)	7 (177.8)	2500	5190	IF–Extended Service (BB)[23]
300	21115	300 RS	120	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	5340	Clear–Rough Service (95) (BB)[23]
300	21117	300 RS	130	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	5340	Clear–Rough Service (95) (BB)[23]
300	21137	300/SBIF	120	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	5410	IF–Silver Bowl Burn base up (46)
300	21139	300 SBIF	130	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	5410	IF–Silver Bowl Burn base up (46)
300	21059	300	277	24	C-7A	9-1/4 (235.1)	7 (177.8)	1000	-	Clear (BB)[23]
500	21530	500	120	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	10950	Clear (BB)[23]
500	21533	500	130	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	10950	Clear (BB)[23]
500	21579	500 IF	120	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	10950	Inside Frost (BB)[23]
500	21581	500 IF	130	24	C-9	9-1/4 (235.1)	7 (177.8)	1000	10950	Inside Frost (BB)[23]
PS40	**Diameter 5 " (127 mm) – Mogul (E39) Brass[20] Base** Fig. 1									
500	21682	500PS40	120	24	C-9	9-1/4 (247.7)	7 (177.8)	1000	9900	Clear
500	21641	500 99	120	24	C-9	9-1/4 (247.7)	7 (177.8)	2500	9070	Clear–Extended Service
500	21643	500 99	130	24	C-9	9-1/4 (247.7)	7 (177.8)	2500	9070	Clear–Extended Service
500	21745	500 99 IF	120	24	C-9	9-1/4 (247.7)	7 (177.8)	2500	9070	IF–Extended Service
500	21657	500 99 IF	130	24	C-9	9-1/4 (247.7)	7 (177.8)	2500	9070	IF–Extended Service
500	21659	500/RS	120	24	C-9	9-1/4 (247.7)	7 (177.8)	1000	-	Clear–Rough Service
500	21661	500 RS	130	24	C-9	9-1/4 (247.7)	7 (177.8)	1000	-	Clear–Rough Service
500	21622	500/SBIF	120	24	C-9	9-1/4 (247.7)	7 (177.8)	1000	9530	IF–Silver Bowl BU (46)
500	21624	500 SBIF	130	24	C-9	9-1/4 (247.7)	7 (177.8)	1000	9530	IF–Silver Bowl BU (46)
500	21557	500	277	24	C-7A	9-1/4 (247.7)	7 (177.8)	1000	9270	Clear
500	21560	500	277	24	C-7A	9-1/4 (247.7)	7 (177.8)	1000	-	Clear
500	21643	500/99	230/250	24	C-7A	9-1/4 (247.7)	7 (177.8)	2500	-	Clear–Extended Service (43)

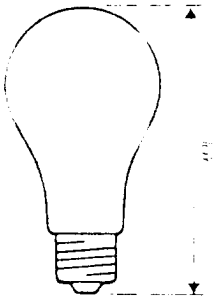


Fig. 1

Mercury Lamps

Mercury lamps combine good efficiency and long life for use in many general lighting applications. The clear mercury lamps offer good optical control while the phosphor-coated lamps provide good color characteristics. Phosphor-coated lamps are available in deluxe white (3900K) and warm deluxe white (3300K).

Description

Mercury lamps consist of a high pressure mercury discharge operating within a quartz arc tube. The arc tube is mounted in a glass outer bulb which may be clear or phosphor-coated.

Applications

Mercury lamps may be used in a variety of applications, including roadway lighting, parking, and storage areas. Indoor applications are usually restricted to industrial facilities where no special consideration is paid to color rendition.

GE Lighting makes E-Z Lux® Lucalox® high pressure sodium and I Line Multi-Vapor® metal halide lamps that are reduced wattage retrofit replacements for mercury lamps. See pages 3.6, 3.13, and 3.14 for more information.

MV10

Operating Position

Universal.

Wattage Range: 40/50 - 100

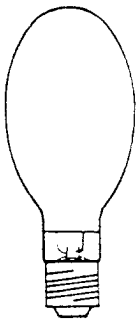


Fig. 2

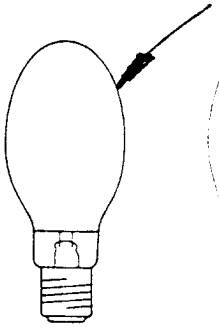


Fig. 3

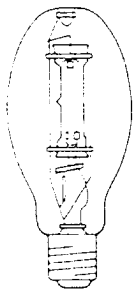


Fig. 4

Watts	MOL in. (mm)	LCL in. (mm)	Order Code	Description	ANSI Code (Ref. Only)	Case Quantity	Life	Reference Lumens Init.	Reference Lumens Mean	Color Temp. K	CRI	Additional Information
A23½ Diameter 2 15/16" (75 mm) Medium (E26/24) Base Fig. 1												
100	5 1/2 (138)	3 1/2 (89)	12467	HR100DX38/A23	H38MP-100/DX	5	18000	4000	3050	3800	50	Deluxe White
100	5 1/2 (138)	3 1/2 (89)	12464	HR100A38/A23	H38LL-100	5	18000	3700	3000	5700	15	Clear
B17 Diameter 2 1/8" (54 mm) Medium (E26/24) Base Fig. 2												
40/50	5 1/2 (130)	3 1/8 (79)	12460	HR40-50DX45-46	H45AV-40-50/DX	5	16000	1140	910	3900	50	Deluxe White 40W on H45 Ballast
								1575	1250			50W on H46 Ballast
75	5 1/2 (138)	3 1/2 (89)	12461	HR75DX43	H43AV-75/DX	5	16000	2800	2250	3900	50	Deluxe White
100	5 1/2 (138)	3 1/2 (89)	17113	HR100DX38/MED	H38AV-100/DX	5	18000	4000	3800	3900	50	Deluxe White (6)
E23½ Diameter 2 15/16" (75 mm) Mogul (E39) Base Fig. 3 White, Fig. 4 Clear												
100	7 1/2 (191)	5 (127)	16617	HR100DX38 5PK	H38JA-100/DX	5	24000+	4200	3200	3900	50	Deluxe White (6)
100	7 1/2 (191)	5 (127)	22575	HR100DX38 12PK	H38JA-100/DX	12	24000+	4200	3200	3900	50	Deluxe White (6)
100	7 1/2 (191)	5 (127)	12474	HR100WDX38	H38JA-100/WDX	5	24000+	3400	2600	3300	50	Warm Deluxe White (6)
100	7 1/2 (191)	5 (127)	12471	HR100A38	H38HT-100	5	24000+	3850	2800	2800	15	Clear (6)

Metal Halide Halarc® Lamps – MXR

Halarc low wattage metal halide lamps provide sparkling white light and excellent color rendition (3200K with a CRI of 65) for perfectly lighted environments for customers and employees alike. The compact elliptical bulbs offer superior control and are ideal sources for general display and downlighting. Halarc lamps provide excellent operating efficiency, which makes both visual and economic sense.

Description

Halarc lamps consist of a specially shaped arc tube which optimizes the thermal properties of the lamp for maximum performance. The 32-watt Halarc lamp has a coated bulb and a quartz shield around the arc tube, enabling the lamps to be operated in open luminaires. The 50- through 175-watt products come in both clear and coated elliptical bulbs with medium or mogul bases.

Operating Notes

The 32-watt Halarc lamps must be operated on special GE lighting-approved ballasts. A suitable high power factor electronic ballast is listed.

Applications

Halarc lamps are ideal for retail and commercial applications requiring efficient white light.

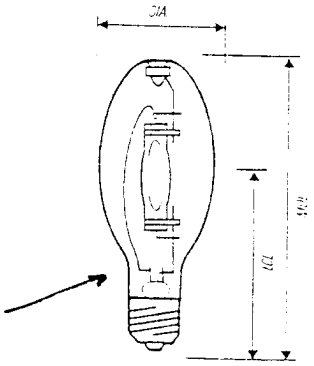
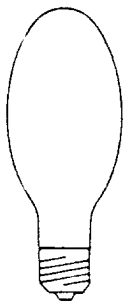
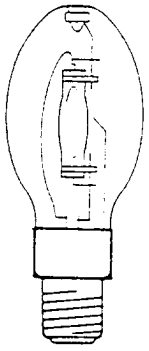
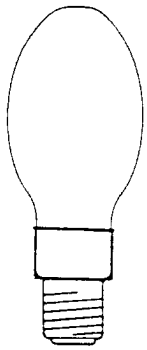
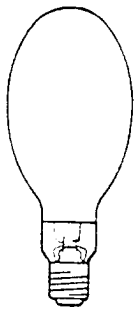


Fig. 1


Fig. 2


Fig. 3


Fig. 4


Fig. 5

Wattage Range: 32 - 175

MH 70 & MH 100

Length in. (mm)	Width in. (mm)	Height in. (mm)	Order Code	Description	Line Voltage	Case Quantity	Input Watts	Line Current (Amps)	Line Frequency (Hz)	Additional Information
MXR 32 Ballasts										
3 (235)	3 (73)	1 (45)	18776	HAL32 120	120	6	43	400	60	Ballast – Use ONLY with 32 watt Halarc Lamps
5 (154)	3 (131)	1 (45)	18776	HAL32 230	230	6	39	18	50	Ballast – Use ONLY with 32 watt Halarc Lamps

Watts	MOL in. (mm)	LCL in. (mm)	Order Code	Description	ANSI Code (Ref. Only)	Case Quantity	Reference Lumens Life	Lumens Int.	Color Means	Temp. K	CRI	Additional Information
ED17 Diameter 2 1/8" (54 mm) Medium (E26/24) Base – Open and Enclosed Fixtures – Vertical Base Up Only Fig. 5												
32	5 (127)	3 (87)	16469	MXR32 C VBU	M100G/32 VBU	6	10000	2500	1900	3200	65	Diffuse–Base Up (3)
BD17 Diameter 2 1/8" (54 mm) Medium (E26/24) Base – Enclosed Fixtures Only – Universal Burn Fig. 1 Clear, Fig. 2 Diffuse												
50	5 (127)	3 (87)	10361	MXR50/U/MED	M110T/M50	6	5000	3500	3550	3200	65	Clear (3)
50	5 (127)	3 (87)	10364	MXR50 C U/MED	M110T/50	6	5000	3500	2500	3200	65	Diffuse (3)
70	5 (127)	3 (87)	22158	MXR70 U/MED	M98SJ/70 U	6	7500	5600	4000	3200	65	Clear (3) MH 70
70	5 (127)	3 (87)	22162	MXR70 C U/MED	M98SJ/70 U	6	7500	5300	3400	3200	65	Coated (3)
100	5 (127)	3 (86)	18680	MXR100/U/MED	M90TW 100	6	15000	9000	6390	3200	65	Clear (3) MH 100
100	5 (127)	3 (86)	18679	MXR100/C U/MED	M90TX 100	6	15000	9500	5440	3200	65	Diffuse (3)
150	5 (127)	3 (86)	22935	MXR150/U/MED	M102TW 150 U	6	15000	13000	8700	3200	65	Clear (3)
150	5 (127)	3 (86)	22936	MXR150 C U/MED	M102TX 150 U	6	15000	12500	7875	3200	65	Diffuse (3)
E23½ Diameter 2 1/8" (75 mm) Mogul (E39) Base – Enclosed Fixtures Only – Vertical Base Up or Base Down Fig. 3 Clear, Fig. 4 Diffuse												
175	7 (197)	5 (127)	11417	MXR175 BU	M57PE 175 XBU	6	10000	16600	13300	3200	65	Clear–Base Up (4, 13)
175	7 (197)	5 (127)	11703	MXR175 C BU	M57PF 175 XBU	6	10000	15750	12150	3200	65	Diffuse–Base Up (4, 13)
175	7 (197)	5 (127)	11420	MXR175 BD	M57PE 175 XBD	6	10000	16600	10300	3200	65	Clear–Base Down (4, 13)
175	7 (197)	5 (127)	11418	MXR175 C BD	M57PF 175 XBD	6	10000	15750	12150	3200	65	Diffuse–Base Down (4, 13)
175	7 (197)	5 (127)	22342	MXR175 BU E	-	6	15000	17100	13700	3200	65	Clear–Base Up (13)

Trimline T8™ Lamps

F208/F308

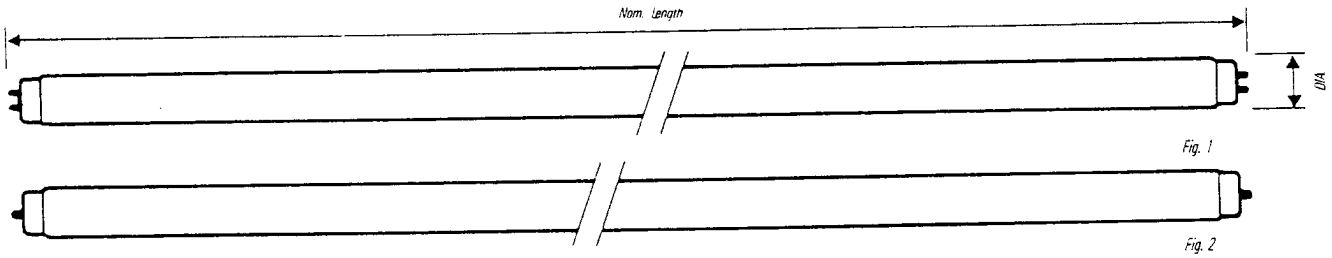


Fig. 1

Fig. 2

Watts	Nominal Length in. (mm)	Product Order Code	Description	Case Quantity	Rated Average Life Hours	Lumens Initial	Lumens Mean	Color Temp. K°	CRI	Additional Information
T8	**Diameter 1 " (26 mm) – Medium Bipin (G13) Base** Fig. 1									
17	24 (610)	22642	F17T8/SPX30	24	20000	1375	1230	3000	84	RE 830 Phosphor
17	24 (610)	22646	F17T8/SPX35	24	20000	1375	1230	3500	84	RE 835 Phosphor
17	24 (610)	22647	F17T8/SPX41	24	20000	1375	1230	4100	80	RE 841 Phosphor
17	24 (610)	17033	F17T8/SP30	24	20000	1325	1190	3000	75	RE 730 Phosphor
17	24 (610)	17035	F17T8/SP35	24	20000	1325	1190	3500	75	RE 735 Phosphor
17	24 (610)	17036	F17T8/SP41	24	20000	1325	1190	4100	75	RE 741 Phosphor
25	36 (915)	22648	F25T8/SPX30	24	20000	2200	1980	3000	84	RE 830 Phosphor
25	36 (915)	22650	F25T8/SPX35	24	20000	2200	1980	3500	84	RE 835 Phosphor
25	36 (915)	22651	F25T8/SPX41	24	20000	2200	1980	4100	80	RE 841 Phosphor
25	36 (915)	15943	F25T8/SP30	24	20000	2125	1910	3000	75	RE 730 Phosphor
25	36 (915)	15944	F25T8/SP35	24	20000	2125	1910	3500	75	RE 735 Phosphor
25	36 (915)	15945	F25T8/SP41	24	20000	2125	1910	4100	75	RE 741 Phosphor
32	48 (1220)	22655	F32T8/SPX30 *	24	20000	2950	2650	3000	84	RE 830 Phosphor
32	48 (1220)	22656	F32T8/SPX35	24	20000	2950	2650	3500	84	RE 835 Phosphor
32	48 (1220)	22657	F32T8/SPX41	24	20000	2950	2650	4100	80	RE 841 Phosphor
32	48 (1220)	23460	F32T8/SPX50	24	20000	2800	2520	5000	80	RE 850 Phosphor
32	48 (1220)	15946	F32T8/SP30	24	20000	2850	2570	3000	75	RE 730 Phosphor
32	48 (1220)	15947	F32T8/SP35	24	20000	2850	2570	3500	75	RE 735 Phosphor
32	48 (1220)	15949	F32T8/SP41	24	20000	2850	2570	4100	75	RE 741 Phosphor
40	60 (1524)	22660	F40T8/SPX30	24	20000	3725	3350	3000	84	RE 830 Phosphor
40	60 (1524)	22661	F40T8/SPX35	24	20000	3725	3350	3500	84	RE 835 Phosphor
40	60 (1524)	22662	F40T8/SPX41	24	20000	3725	3350	4100	80	RE 841 Phosphor
40	60 (1524)	15950	F40T8/SP30	24	20000	3600	3240	3000	75	RE 730 Phosphor
40	60 (1524)	15951	F40T8/SP35	24	20000	3600	3240	3500	75	RE 735 Phosphor
40	60 (1524)	15952	F40T8/SP41	24	20000	3600	3240	4100	75	RE 741 Phosphor
T8	**Diameter 1 " (26 mm) – Single Pin (Fa8) Base** Fig. 2									
59	96 (2440)	23414	F96T8/SPX30	24	15000	5950	5410	3000	84	RE 830 Phosphor
59	96 (2440)	23415	F96T8/SPX35	24	15000	5950	5410	3500	84	RE 835 Phosphor
59	96 (2440)	23416	F96T8/SPX41	24	15000	5950	5410	4100	80	RE 841 Phosphor
59	96 (2440)	23407	F96T8/SP30	24	15000	5800	5280	3000	75	RE 730 Phosphor
59	96 (2440)	23411	F96T8/SP35	24	15000	5800	5280	3500	75	RE 735 Phosphor
59	96 (2440)	23412	F96T8/SP41	24	15000	5800	5280	4100	75	RE 741 Phosphor

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F212 / F312

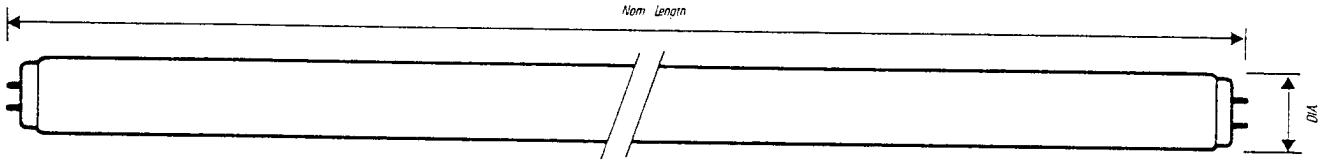


Fig. 1

F40T12 RS Diameter 1 1/2 " (38 mm) – Energy Saving – Medium Bipin (G13) Base *Fig. 1*

Nominal Wattage	Nominal Length in. (mm)	Product Order Code	Description	Case Quantity	Rated Average Life Hours	Lumens Initial	Lumens Mean	Color Temp. K	CRI	Additional Information
32	48 (1220)	14226	F40SP30/RS/WMP 30PK	30	15000+	2650	2410	3000	70	RE 730 Phosphor. Watt-Miser® Plus (1)
32	48 (1220)	14225	F40SP35/RS/WMP 30PK	30	15000+	2650	2410	3500	73	RE 735 Phosphor. Watt-Miser® Plus (1)
32	48 (1220)	14224	F40SP41/RS/WMP 30PK	30	15000+	2650	2410	4100	70	RE 741 Phosphor. Watt-Miser® Plus (1)
32	48 (1220)	14221	F40CW/RS/WMP 30PK	30	15000+	2525	2220	4150	62	Cool White. Watt-Miser® Plus (1)
32	48 (1220)	14223	F40WW/RS/WMP 30PK	30	15000+	2625	2310	3000	52	Warm White. Watt-Miser® Plus (1)
32	48 (1220)	14222	F40LW/RS/WMP 30PK	30	15000+	2700	2380	4200	49	Lite White. Watt-Miser® Plus (1)
34	48 (1220)	14627	F40SPX30/RS/WM 30PK *	30	20000	2850	2570	3000	82	RE 830 Phosphor. Watt-Miser®
34	48 (1220)	14628	F40SPX35/RS/WM 30PK	30	20000	2850	2570	3500	82	RE 835 Phosphor. Watt-Miser®
34	48 (1220)	14811	F40SPX41/RS/WM 30PK	30	20000	2850	2570	4100	82	RE 841 Phosphor. Watt-Miser®
34	48 (1220)	23459	F40SPX50/RS/WM 30PK	30	20000	2700	2430	5000	82	RE 850 Phosphor. Watt-Miser®
34	48 (1220)	14200	F40SP30/RS/WM 30PK	30	20000	2800	2520	3000	70	RE 730 Phosphor. Watt-Miser®
34	48 (1220)	13807	F40SP35/RS/WM 30PK	30	20000	2800	2520	3500	73	RE 735 Phosphor. Watt-Miser®
34	48 (1220)	23486	F40SP35/WM/C 10PK	10	20000	2800	2520	3500	73	RE 735 Phosphor. Watt-Miser®. Commercial Pack
34	48 (1220)	19989	F40SP35/RS/WM 6PK	24	20000	2800	2520	3500	73	RE 735 Phosphor. Watt-Miser®
34	48 (1220)	21984	F40SP35/WM/C 6PK	6	20000	2800	2520	3500	73	RE 735 Phosphor. Watt-Miser®. Commercial Pack
34	48 (1220)	13809	F40SP41/RS/WM 30PK	30	20000	2800	2520	4100	70	RE 741 Phosphor. Watt-Miser®
34	48 (1220)	13803	F40CW/RS/WM 30PK	30	20000	2650	2280	4150	62	Cool White. Watt-Miser®
34	48 (1220)	23485	F40CW/RS/WM/C 10PK	10	20000	2650	2280	4150	62	Cool White. Watt-Miser® Commercial Pack
34	48 (1220)	40987	F40CW/RS/WM 6PK	24	20000	2650	2280	4150	62	Cool White. Watt-Miser®
34	48 (1220)	22020	F40CW/RS/WM/C 6PK	6	20000	2650	2280	4150	62	Cool White. Watt-Miser®. Commercial Pack
34	48 (1220)	13821	F40WW/RS/WM 30PK	30	20000	2750	2370	3000	52	Warm White. Watt-Miser®
34	48 (1220)	12702	F40M/RS 6PK	24	20000	2750	2370	3000	52	Miser®
34	48 (1220)	15982	F40M/CONS30/SLV	30	20000	2750	2370	3000	52	Miser®
34	48 (1220)	13822	F40LW/RS/WM 30PK	30	20000	2825	2430	4200	49	Lite White. Watt-Miser®
34	48 (1220)	44307	F40LW/RS/WM 6PK	24	20000	2825	2430	4200	49	Lite White. Watt-Miser®
34	48 (1220)	13820	F40W/RS/WM 30PK	30	20000	2650	2280	3450	60	White. Watt-Miser®
34	48 (1220)	13819	F40D/RS/WM 30PK	30	20000	2225	1910	6250	75	Daylight. Watt-Miser®
34	48 (1220)	13804	F40CWX/RS/WM 30PK	30	20000	1950	1580	4175	89	Deluxe Cool White. Watt-Miser®
34	48 (1220)	13808	F40WWX/RS/WM 30PK	30	20000	1925	1560	3025	77	Deluxe Warm White. Watt-Miser®
34	48 (1220)	19217	F40/C50/RS/WM	30	20000	2000	1720	5000	90	Chroma 50. Watt-Miser®

GENERAL ELECTRIC HPS BALLAST ELECTRICAL DATA – SINGLE VOLTAGE, 60Hz

ANSI Lamp Type	Watts	Line Volts	Line-Operating Amperes	Line Watts	Power Factor %	Line-Starting Amperes	% Allowable Line Voltage Dip
HPS BALLST–REGULATOR (LAG TYPE) – MAGNETIC REGULATOR ALLOWABLE LINE VOLTAGE VARIATION: ±10%							
S-51	400	120	4.1	475*		1.6	
		208	2.4	475		1.1	
		240	2.1	475		0.8	
		277	1.8	475		0.7	
		347	1.4	475		0.6	
		480	1.1	475		0.5	
S-67	310	120	3.3	383		1.5	
		208	2.0	383		1.0	
		240	1.7	383		0.8	
		277	1.5	383		0.7	
		347	1.2	383		0.6	
		480	0.9	383		0.4	
S-50	250	120	2.7	312		1.0	
		208	1.6	312		0.6	
		240	1.4	312		0.5	
		277	1.2	312		0.4	
		347	0.9	312		0.3	
		480	0.7	312		0.3	
S-66	200	120	2.1	246		0.9	
		208	1.2	246		0.6	55
		240	1.1	246	90+	0.5	to
		277	0.9	246		0.4	20
		347	0.7	246		0.3	
		480	0.6	246		0.3	
S-55	150	120	1.7	193		0.9	
		208	1.0	193		0.5	
		240	0.9	193		0.5	
		277	0.8	193		0.4	
		347	0.6	193		0.4	
		480	0.5	193		0.3	
S-54	100	120	1.2	136		0.7	
		208	0.7	136		0.4	
		240	0.6	136		0.4	
		277	0.5	136		0.3	
		347	0.4	136		0.2	
		480	0.3	136		0.2	
S-62	70	120	0.9	99		0.5	
		208	0.5	99		0.4	
	*	240	0.5	99		0.3	
		277	0.4	99		0.3	
		347	0.3	99		0.2	
		480	0.2	99		0.2	
HPS BALLST–REGULATOR (LEAD TYPE) – CWI ALLOWABLE LINE VOLTAGE VARIATION: ±10%							
S-50	250	120	2.5	298		2.0	
		208	1.5	298		1.2	
		240	1.3	298		1.0	
		277	1.2	298		0.9	
		347	0.9	299		0.7	
		480	0.7	300		0.5	
S-66	200	120	2.1	238		1.4	
		208	1.2	238		1.0	
		240	1.1	238	90+	0.7	35
		277	0.9	238	to	0.6	to
		347	0.7	240	65	0.5	10
		480	0.5	260		0.6	
S-55	150	120	1.7	190		0.9	
		240	0.9	190		0.5	
S-54	100	120	1.2	132		0.7	
		240	0.6	132		0.4	
S-62	70	120	0.8	96		0.5	
		240	0.4	96		0.3	

*For outdoor products the line watts are 481.

ANSI Lamp Type	Watts	Line Volts	Line-Operating Amperes	Line Watts	Power Factor %	Line-Starting Amperes	% Allowable Line Voltage Dip
HPS BALLST–AUTO-REGULATOR (LEAD TYPE) – CWA ALLOWABLE LINE VOLTAGE VARIATION: ±10%							
S-52	1000	120	9.6	1096		5.6	
		208	5.8	1102		3.5	
		240	4.8	1096		2.9	
		277	4.4	1096		2.7	
		347	3.5	1104		2.2	
		480	2.5	1102		1.6	
S-111	750	120	7.1	839		6.4	
		208	4.0	836		3.5	
		240	3.5	838		3.1	
		277	3.1	841		2.7	
		347	2.5	849		2.2	
		480	1.8	849		1.5	
S-51	400	120	3.9	466		3.0	
		208	2.2	467		1.9	
		240	2.0	468		1.6	
		277	1.7	468		1.4	
		347	1.4	468		1.0	
		480	1.0	470		0.8	
S-50	250	120	2.6	300		2.6	
		208	1.5	300		1.5	
		240	1.3	300		1.2	
		277	1.2	300	90+	1.1	35
		347	0.9	300	to	0.7	to
		480	0.7	300	65	0.6	10
S-66	200	120	2.1	238		1.2	
		208	1.2	238		0.7	
		240	1.0	238		0.6	
		277	0.9	238		0.6	
		347	0.7	240		0.5	
		480	0.6	240		0.4	
S-55	150	120	1.6	189		0.9	
		208	1.0	189		0.5	
		240	0.9	189		0.5	
		277	0.7	189		0.4	
		347	0.6	190		0.4	
		480	0.5	190		0.3	
S-54	100	120	1.2	127		0.7	
		208	0.7	126		0.4	
		240	0.6	126		0.4	
		277	0.5	126		0.3	
		347	0.4	127		0.2	
		480	0.3	127		0.2	
S-62	70	120	0.8	118		0.5	
		208	0.5	119		0.4	
		240	0.4	119		0.3	
		277	0.3	119		0.3	
		347	0.3	120		0.2	
		480	0.2	120		0.2	
SUPER LOW LOSS BALLAST HPS BALLAST–AUTO-REGULATOR (LEAD TYPE)–CWI ALLOWABLE LINE VOLTAGE VARIATION: ±10%							
S-51	400	120	3.75	442		2.63	
		208	2.20	449		1.50	
		240	1.90	449		1.30	
		277	1.73	449		1.21	35
		480	1.00	453	90+	0.70	to
S-60	250	120	2.40	280		1.85	10
		208	1.40	287		1.10	
		240	1.20	287		0.97	
		277	1.00	285		0.81	
		480	0.63	291		0.49	

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GENERAL ELECTRIC HPS BALLAST ELECTRICAL DATA – SINGLE VOLTAGE, 60Hz

ANSI Lamp Type	Watts	Line Volts	Line-Operating Amperes	Line Watts	Power Factor %	Line-Starting Amperes	% Allowable Line Voltage Dip
HPS BALLST–REACTOR TYPE (HIGH POWER FACTOR REACTOR OR REACTOR AUTO-TRANSFORMER) ALLOWABLE LINE VOLTAGE VARIATION: ±5%							
S-52	1000	480	2.3	1062		4.2**	
S-51	400	208	2.3	440		3.8**	
		240	1.9	438		3.8**	
S-67	310	208	1.8	335		2.8**	
		240	1.5	339		2.5**	
S-50	250	208	1.5	276	90+	2.3**	15
		240	1.4	284	to	2.4**	to
S-66	200	208	1.2	225	80	1.8**	7
		240	1.1	230		1.9**	
S-55	150	120	1.6	171		2.4**	
S-54	100	120	1.1	117		1.7**	
S-62	70	120	0.8	83		1.3**	
S-68	50	120	0.5	58		0.9**	
HPS BALLST–REACTOR TYPE (NORMAL POWER FACTOR REACTOR AUTO-TRANSFORMER) ALLOWABLE LINE VOLTAGE VARIATION: ±5%							
S-52	1000	480	4.8	1062	46	7.0	
S-51	400	208	4.7	436	44	6.6	
		240	4.7	438	39	6.2	
S-67	310	208	3.7	337	44	5.0	
		240	3.6	335	40	4.6	
S-50	250	208	3.0	275	45	3.9	15
		240	3.1	281	40	3.8	to
S-66	200	208	2.4	224	45	3.3	7
		240	2.4	227	40	3.2	
S-55	150	120	3.3	171	44	4.5	
S-54	100	120	2.2	117	45	2.9	
S-62	70	120	1.6	83	42	2.0	
S-68	50	120	1.2	58	41	1.5	
S-76	35	120	0.8	41	41	1.1	
HPS BALLST–REACTOR TYPE (HIGH POWER FACTOR LAG) ALLOWABLE LINE VOLTAGE VARIATION: ±5%							
S-111	1000	480	1.8	827		3.3**	
S-50	250	120	2.6	295		4.7**	
S-66	200	120	2.1	226		3.1**	
S-55	150	240	0.8	184		1.3**	
		277	0.2	184		1.2**	
		347	0.6	184		0.9**	
		480	0.4	194		0.4**	
S-54	100	240	0.5	121		1.0**	
		277	0.4	121	90+	0.8**	15
		347	0.4	121	to	0.7**	to
		480	0.3	129	80	0.5**	7
S-62	70	240	0.4	86		0.7**	
		277	0.4	86		0.7**	
		347	0.3	86		0.7**	
		480	0.2	93		0.3**	
S-68	50	240	0.3	63		0.6**	
		277	0.3	63		0.5**	
		347	0.2	63		0.4**	
		480	0.2	68		0.3**	

ANSI Lamp Type	Watts	Line Volts	Line-Operating Amperes	Line Watts	Power Factor %	Line-Starting Amperes	% Allowable Line Voltage Dip
HPS BALLST–REACTOR TYPE (NORMAL POWER FACTOR LAG) ALLOWABLE LINE VOLTAGE VARIATION: ±5%							
S-51	400	120	9.4	454	40	13.3	
S-50	250	120	5.7	288	42	8.0	
S-66	200	120	4.8	231	41	6.5	
S-55	150	240	1.9	187	41	2.4	
		277	1.6	187	42	2.1	
		347	1.3	186	41	1.6	
S-54	100	240	1.4	122	36	1.7	15
		277	1.2	121	36	1.5	to
		347	1.0	120	35	1.2	7
S-62	70	240	1.1	86	34	1.4	
		277	1.0	86	34	1.2	
		347	0.8	85	33	1.1	
		480	0.6	91	32	0.9	
S-68	50	240	0.9	62	30	1.0	
		277	0.7	62	31	0.9	
		347	0.6	62	31	0.7	
		480	0.5	67	29	0.6	

ANSI Lamp Type	Watts	Line-Operating Amperes	Line Watts	Power Factor %	Loading Factor ***
HPS BALLST–SERIES TYPE					
S-50	250		285	77	0.96
S-66	200		233	76	0.75
S-55	150	6.6	174	82	0.57
S-54	100		121	81	0.40
S-62	70		85	77	0.28
S-68	50		64	79	0.22

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GENERAL ELECTRIC METAL HALIDE AND MERCURY BALLAST ELECTRICAL DATA – SINGLE VOLTAGE, 60Hz

ANSI Lamp Type	Watts	Line Volts	% Allowable Line Voltage Variation	Line-Operating Amperes	Line Watts	Power Factor %	Line-Starting Amperes	% Allowable Line Voltage Dip
METAL HALIDE BALLAST – AUTO-REGULATOR TYPE (PEAK LEAD) CWA								
	2000	208		11.2	2125		10.0	
		240		9.5	2115		8.5	
		277		8.3	2115		7.2	
		347		6.6	2122		5.6	
		480		4.8	2132		4.4	
	1650	120		15.0	1770		9.0	
		208		9.0	1770		5.0	
		240		7.7	1770		4.4	
		277		6.5	1765		4.0	
		347		5.4	1770		3.5	
		480		3.9	1785		3.1	
M-48	1500	120		14.4	1630		11.2	
		208		8.5	1630		6.9	
		240		7.3	1630		5.6	
		277		6.3	1630		4.7	
		347		4.8	1620		3.9	
		480	±10	3.7	1630	90+	2.8	50
M-47	1000	120		9.0	1080		6.6	
		208		5.4	1070		4.1	
		240		4.8	1080		3.5	
		277		4.1	1080		2.9	
		347		3.6	1070		2.9	
		480		2.6	1088		1.8	
M-59	400	120		4.0	450		3.5	
		208		2.3	456		2.3	
		240		2.0	456		2.0	
		277		1.7	456		1.7	
		347		1.6	457		1.4	
		480		1.0	458		1.0	
M-58	250	120		2.5	288		2.0	
		208		1.5	288		1.2	
		240		1.2	288		1.0	
		277		1.1	292		0.8	
		347		0.9	289		0.6	
		480		0.6	292		0.5	
M-57	175	120		1.8	207		1.4	
		208		1.0	207		0.9	
		240		0.9	207		0.7	
		277		0.8	207		0.7	
		347		0.6	209		0.5	
		480		0.5	207		0.3	
METAL HALIDE BALLAST–MAGNETIC REGULATOR TYPE								
	400	120		4.0	461		1.6	
		208		2.3	461		0.9	
		240	±10	2.0	460	90+	0.8	45
		277		1.7	460		0.7	
		347		1.3	455		0.6	
METAL HALIDE BALLAST–REACTOR TYPE (HIGH POWER FACTOR LAG)**								
M-90	100	120		1.0	119		2.1	
		208		0.6	119		1.2	
		240		0.5	119		1.1	
		277		0.4	119		1.0	
		480	±10	0.3	125	90+	0.6	20
M-98	70	120		0.8	89		2.0	
		208		0.5	89		1.2	
		240		0.4	89		1.0	
		277		0.3	89		0.9	
		480		0.2	94		0.5	
SUPER LOW LOSS BALLAST								
METAL HALIDE BALLAST – AUTO-REGULATOR TYPE (PEAK LEAD) CWA								
M-59	400	120		3.00	437		3.00	
		208		2.20	438		1.65	
		240		1.90	439		1.43	
		277		1.79	438		1.34	
		480	±10	0.97	444	90+	0.73	50
M-58	250	120		2.48	272		2.20	
		208		1.43	278		1.28	
		240		1.25	278		1.10	
		277		1.00	274		0.92	
		480		0.63	281		0.48	

ANSI Lamp Type	Watts	Line Volts	% Allowable Line Voltage Variation	Line-Operating Amperes	Line Watts	Power Factor %	Line-Starting Amperes	% Allowable Line Voltage Dip
MERCURY BALLAST – REGULATOR TYPE (CWI)								
H-36	1000	480		2.4	1095		0.7	
H-35	700	480		1.8	780		0.4	
H-33	400	120		4.3	464		1.8	
		240		2.1	460		0.9	
		277		1.8	460		0.7	
		480		1.1	460		0.4	
H-37	250	120		2.7	305		1.2	
		240		1.3	302		0.6	
		277	±13	1.2	300	90+	0.5	60
		480		0.7	292		0.2	
H-39	175	120		1.8	210		0.6	
		277		0.8	210		0.3	
		480		0.5	210		0.1	
H-38	100	120		1.1	127		0.7	
	*	240		0.6	127		0.3	
		277		0.5	127		0.2	
		480		0.3	127		0.1	
MERCURY BALLAST – AUTO-REGULATOR TYPE (CWA)								
H-36	1000	120		9.7	1082		7.4	
		208		5.6	1082		4.4	
		240		4.9	1082		3.7	
		277		4.2	1082		3.2	
		480		2.4	1082		2.0	
H-33	400	120		4.2	453		3.5	
		208		2.4	453		2.0	
		240	±10	2.1	453	90+	1.8	50
		277		1.8	457		1.5	
		480		1.1	453		0.9	
H-37	250	120		2.7	292		2.1	
		208		1.6	292		1.3	
		240		1.4	292		1.1	
		277		1.2	292		0.95	
MERCURY BALLAST – REACTOR TYPE (HIGH POWER FACTOR)**								
H-36	1000	480		2.4	1070		3.3	
H-35	700	480		1.5	735		2.2	
H-33	400	240	±5	2.0	430	90+	3.0	25
H-37	250	240		1.2	275		1.7	
H-39	175	240		0.9	195		1.5	
H-38	100	240		0.5	115		0.9	
MERCURY BALLAST – REACTOR TYPE (NORMAL POWER FACTOR)								
H-33	400	240		3.4	430	54	5.1	
H-37	250	240	±5	2.1	275	54	3.3	25
H-39	175	240		1.6	193	55	2.6	
H-38	100	240		0.9	115	53	1.6	
MERCURY BALLAST – REACTOR TYPE (NORMAL POWER FACTOR LAG)								
H-33	400	120		7.3	454	54	10.8	
H-37	250	120	±5	4.8	286	51	8.2	25
H-39	175	120		3.4	205	51	5.7	
H-38	100	120		2.0	117	48	3.2	

MERCURY BALLAST – SERIES TYPE

ANSI Lamp Type	Watts	Frequency Hz	Line-Operating Amperes	Line Watts	Power Factor %	Loading Factor ***
H-36	1000	60	6.6	1070	86	1.55
H-33	400			445	86	0.65
H-37	250			285	84	0.47
H-39	175			207	84	0.40
H-38	100			125	84	0.30

WARNING

Size branch circuits to accomodate line-operating amperes or line starting amperes–whichever is larger.

WARNING

The data listed is typical of that obtained when a ballast is tested under laboratory conditions as a separate component. When these components are encapsulated, or mounted in luminaires, the values listed below will vary depending upon the enclosure being used, lamp position and lamp variations. The component value method of testing is used in order that uniform testing procedures may be followed on all ballasts.

1. Input voltage variations over the full range of allowable percentage range will vary lamp wattage as shown below: MH mag-regulator = 5%; MH regulator (CWI) = 11% to 17%; MH auto-regulator (CWA) = 20%; MH lag = 12% to 15%; mercury regulator = 4%; mercury auto-regulator (CWA) = 10%; mercury reactors and lags = 20%
2. The voltage of high pressure sodium lamps changes with lamp life causing corresponding changes in lamp watts, so that the regulation cannot be stated in the same terms as for other HID lamp types. All HPS ballast types, over the full range of "allowable line voltage variation," control lamp watts within the prescribed limits of operation throughout the rated life of the lamp, as defined by trapezoidal limits in ANSI Standards for High Pressure Sodium lamps.
3. Mercury reactor ballasts listed in wattage 100 to 400 may be used at 50Hz as follows: 240 volts (60Hz) at 220 volts (50Hz). Reactors used on 220 volts are only adequate for lamp starting to 0°F.
4. All ballasts will provide satisfactory lamp starting to -20°F (-40°F for HPS) minimum over the recommended line-voltage variation.
5. Fusing: Not recommended as protection for individual HID ballast. If specified, fuse(s) should be rated 3 times maximum current. Fusing may cause nuisance interruptions. The fusing of a reactor type ballast should be avoided.

** Note that these starting currents are power factor capacitor currents which flow if the lamp draws no current, for example, hot restart conditions. Normal current will be lower.

*** Kilowatts of constant-current transformer capacity per ballast recommedned for proper operation.

GENERAL ELECTRIC BALLAST ELECTRICAL DATA – MULTIVOLT, 60Hz
HPS, METAL HALIDE AND MERCURY

ANSI Lamp Type	Watts	Line Volts	Line-Operating Amperes	Line Watts	Power Factor %	Line-Starting Amperes	% Allowable Line Voltage Dip
HPS BALLST–REGULATOR (LAG TYPE) – MAGNETIC REGULATOR ALLOWABLE LINE VOLTAGE VARIATION: ±10%							
S-51	400	120	4.0	478		1.6	
		208	2.3	475		1.0	
		240	2.0	475		0.8	
		277	1.7	475		0.7	
		347	1.4	475		0.6	
S-67	310	120	3.3	383		1.5	
		208	2.2	382		1.0	
		240	1.7	382		0.8	
		277	1.5	382		0.7	55
		347	1.2	382	90+	0.6	to
S-50	250	120	2.5	312		1.4	25
		208	1.5	312		0.8	
		240	1.3	312		0.7	
		277	1.1	312		0.6	
		347	0.9	312		0.5	
S-66	200	120	2.2	253		1.2	
		208	1.3	251		0.9	
		240	1.1	250		0.8	
		277	1.0	250		0.7	
HPS BALLAST – REGULATOR (LEAD TYPE) – CWI ALLOWABLE LINE VOLTAGE VARIATIONL: ±10%							
S-50	250	120	2.5	296		2.0	
		208	1.5	296		1.2	
		240	1.3	296		1.0	
		277	1.2	296		0.9	
		347	0.9	296	90+	0.7	50
S-66	200	120	2.1	238	to	1.4	to
		208	1.2	238	65	1.0	10
		240	1.1	238		0.7	
		277	0.9	238		0.6	
		347	0.7	238		0.5	
HPS BALLAST – AUTO-REGULATOR (LEAD TYPE) – CWA ALLOWABLE LINE VOLTAGE VARIATION: ±10%							
S-52	1000	120	9.6	1096		5.6	
		208	5.8	1102		3.5	
		240	4.8	1096		2.9	
		277	4.4	1096		2.7	
		347	3.5	1104		2.2	
S-51	400	120	3.9	466		3.0	
		208	2.2	467		1.9	
		240	2.0	468		1.6	
		277	1.7	468		1.4	
		347	1.4	468		1.0	
S-50	250	120	2.6	300		2.6	
		208	1.5	300		1.5	
		240	1.3	300		1.2	
		277	1.2	300		1.1	
		347	0.9	300		0.7	
S-66	200	120	2.1	238		1.2	
		208	1.2	238	90+	0.7	35
		240	1.0	238	to	0.6	to
		277	0.9	238	65	0.6	10
		347	0.7	240		0.4	
S-55	150	120	1.6	189		0.9	
		208	1.0	189		0.5	
		240	0.9	189		0.5	
		277	0.7	189		0.4	
		347	0.6	189		0.4	
S-54	100	120	1.2	127		0.7	
		208	0.7	126		0.4	
		240	0.6	126		0.4	
		277	0.5	126		0.3	
		347	0.4	127		0.2	
S-62	70	120	0.8	118		0.5	
		208	0.5	119		0.4	
		240	0.4	119		0.3	
		277	0.3	119		0.3	
		347	0.3	120		0.2	
HPS BALLST– REACTOR TYPE (HIGH POWER FACTOR LAG) ALLOWABLE LINE VOLTAGE VARIATION: ±5%							
S-111	750	120	7.5	840		13.5**	
		208	4.0	820		7.0**	
		240	3.8	834		6.8**	
		480	3.2	832		6.0**	
S-55	150	120	1.6	183		2.6**	
		208	0.9	184		1.5**	
		240	0.8	184		1.3**	
		277	0.7	184		1.0**	
		347	0.4	184		0.9**	
S-54	100	120	1.0	120		2.0**	
		208	0.6	121	90	1.2**	15
		240	0.5	121	to	1.0**	to
		277	0.4	121	65	0.8**	7
		347	0.3	121		0.7**	
S-62	70	120	0.8	86		1.4**	
		208	0.5	86		0.8**	
		240	0.4	86		0.7**	
		277	0.4	86		0.7**	
		347	0.3	86		0.5**	
S-68	50	120	0.6	62		1.2**	
		208	0.4	63		0.7**	
		240	0.3	63		0.6**	
		277	0.3	63		0.5**	
		347	0.2	63		0.4**	

ANSI Lamp Type	Watts	Line Volts	Line-Operating Amperes	Line Watts	Power Factor %	Line-Starting Amperes	% Allowable Line Voltage Dip
HPS BALLAST – REACTOR TYPE (NORMAL POWER FACTOR LAG) ALLOWABLE LINE VOLTAGE VARIATION: ±5%							
S-55	150	120	3.8	187	41	4.8	
		208	2.2	187	41	2.8	
		240	1.9	187	41	2.4	
		277	1.6	187	42	2.1	
		347	1.3	187	41	1.6	
S-54	100	120	2.8	122	36	3.4	
		208	1.6	122	36	2.0	
		240	1.4	122	36	1.7	
		277	1.2	121	36	1.5	
		347	1.0	120	35	1.2	15
S-62	70	120	2.2	86	34	2.8	to
		208	1.3	86	34	1.6	7
		240	1.1	86	34	1.4	
		277	1.0	86	34	1.2	
		347	0.8	85	33	1.1	
S-68	50	120	1.8	62	30	2.0	
		208	1.0	62	30	1.2	
		240	0.9	62	30	1.0	
		277	0.7	62	31	0.9	
		347	0.6	62	31	0.7	
METAL HALIDE BALLAST – AUTO-REGULATOR TYPE (PEAD LEAD) CWA ALLOWABLE LINE VOLTAGE VARIATION: ±10%							
	1650	120	15.0	1770		9.0	
		208	9.0	1770		5.0	
		240	7.7	1770		4.4	
		277	6.3	1770		4.0	
		347	5.3	1770		3.5	
M-48	1500	120	14.2	1625		11.2	
		208	8.4	1630		6.9	
		240	7.2	1630		5.6	
		277	6.2	1630		4.7	
		347	5.0	1630		3.9	
M-47	1000	120	9.0	1063		6.6	
		208	5.4	1068		4.1	
		240	4.8	1068		3.5	
		277	4.1	1068		2.9	
		347	3.6	1068	90+	2.8	
M-59	400	120	4.0	453	to	4.0	50
		208	2.6	454	80	2.5	
		240	2.0	455		2.0	
		277	1.7	456		1.7	
		347	1.4	456		1.4	
M-58	250	120	2.5	287		2.0	
		208	1.5	288		1.2	
		240	1.2	288		1.0	
		277	1.1	288		0.8	
		347	0.9	292		0.6	
M-57	175	120	1.8	206		1.4	
		208	1.0	207		0.9	
		240	0.9	207		0.7	
		277	0.8	207		0.7	
		347	0.6	209		0.5	
METAL HALIDE BALLAST – MAGNETIC REGULATOR ALLOWABLE LINE VOLTAGE VARIATION: ±10%							
	400	120	4.0	461		1.6	
		208	2.3	461		0.9	
		240	2.0	460	90+	0.8	45
		277	1.7	460		0.7	
		347	1.3	458		0.6	
METAL HALIDE BALLAST – REACTOR TYPE (HIGH POWER FACTOR LAG) ALLOWABLE LINE VOLTAGE VARIATION: ±5%							
M-90	100	120	1.0	121		2.0**	
		208	0.6	121		1.2**	
	*	240	0.5	121		1.0**	
		277	0.4	121		0.4**	20
S-62	70	120	0.8	89		2.0**	
		208	0.5	89		1.2**	
	*	240	0.4	89		1.0**	
		277	0.3	89		0.9**	
MERCURY BALLAST – REGULATOR BALLAST (CWI) ALLOWABLE LINE VOLTAGE VARIATION: ±13%							
H-36	1000	120	9.2	1096		2.4	
		208	5.3	1092		1.4	
		240	4.5	1088		1.2	
		277	3.9	1088		1.0	
H-33	400	120	4.0	458		11.7	
		208	2.3	459		0.9	
		240	2.0	455		0.9	
		277	1.7	457		0.8	
H-37	250	120	2.4	288		1.2	
		208	1.4	288		0.7	50
		240	1.2	288		0.5	
		277	1.1	288		0.5	
H-39	175	120	1.7	205		1.0	
		208	1.0	206		0.6	
		240	0.9	206		0.5	
		277	0.7	205		0.5	
H-38	100	120	1.2	126		0.6	
		208	0.7	125		0.4	
		240	0.6	125		0.3	
		277	0.5	125		0.3	

** Note that these starting currents are power factor capacitor currents which flow if the lamp draws no current, for example, hot restart conditions. Normal current will be lower.

MH10

MH70

Data subject to change without notice

111-29

Rapid Start

Lamp Data				Circuit (Volts)	Catalog Number	Input Watts (ANSI)†	Line Current (AMPS)	Ballast Factor (BF)	% THD (ANSI)	Notes	Weight Each (Lbs.)
No.	Type	Watts	Min. Start Tmp. (°F)								
1	F17T8	17	50	120	REL-2P32-RH-TP	22	.19	1.000	<20	1,2	2.5
				277	VEL-2P32-RH-TP	22	.08	1.000			
2	F17T8	17	50	120	REL-2P32-RH-TP	34	.30	.850–.925	<20	1,2	2.5
				277	VEL-2P32-RH-TP	34	.13	.850–.925			
3	F17T8	17	50	120	REL-3P32-RH-TP	51	.44	.850–.925	<20	1,2,11	2.5
				277	VEL-3P32-RH-TP	46	.17	.850–.925			
4	F17T8	17	50	120	REL-4P32-RH-TP	64	.55	.850–.925	<20	1,2,10	2.5
				277	VEL-4P32-RH-TP	62	.23	.850–.925			
1	F25T8	25	50	120	REL-2P32-RH-TP	28	.25	1.000	<20	1,2	2.5
				277	VEL-2P32-RH-TP	28	.11	1.000			
2	F25T8	25	50	120	REL-2P32-RH-TP	45	.39	.850–.925	<20	1,2	2.5
				277	VEL-2P32-RH-TP	45	.17	.850–.925			
3	F25T8	25	50	120	REL-3P32-RH-TP	69	.59	.850–.925	<20	1,2,5	2.5
				277	VEL-3P32-RH-TP	64	.24	.850–.925			
4	F25T8	25	50	120	REL-4P32-RH-TP	87	.75	.850–.925	<20	1,2,6	2.5
				277	VEL-4P32-RH-TP	85	.32	.850–.925			
1	F32T8	32	* 50	120	REL-2P32-RH-TP	36	.31	1.000	<20	1,2	2.5
				277	VEL-2P32-RH-TP	36	.14	1.000			
2	F32T8	32	* 50	120	REL-2P32-RH-TP	58	.51	.850–.925	<20	1,2	2.5
				277	VEL-2P32-RH-TP	58	.22	.850–.925			
3	F32T8	32	50	120	REL-3P32-RH-TP	87	.76	.850–.925	<20	1,2,7	2.5
				277	VEL-3P32-RH-TP	82	.31	.850–.925			
4	F32T8	32	50	120	REL-4P32-RH-TP	112	.96	.850–.925	<20	1,2,8	2.5
				277	VEL-4P32-RH-TP	110	.41	.850–.925			
1	F40T8	40	50	120	REL-2P32-RH-TP	43	.38	1.000	<20	1,2	2.5
				277	VEL-2P32-RH-TP	43	.16	1.000			
2	F40T8	40	50	120	REL-2P32-RH-TP	69	.60	.850–.925	<20	1,2	2.5
				277	VEL-2P32-RH-TP	69	.26	.850–.925			
3	F40T8	40	50	120	REL-3P32-RH-TP	108	.93	.850–.925	<20	1,2,9	2.5
				277	VEL-3P32-RH-TP	100	.38	.850–.925			

†Tests to ANSI C82.2 Methods.

NOTES:

1. Provides instant starting of rapid start lamps (does not provide continuous filament heat).
2. Will also operate equivalent T8 U-shaped lamps.
5. Will also operate 2 or 1 F25T8.
6. Will also operate 3 or 2 F25T8.
7. Will also operate 2 or 1 F32T8.
8. Will also operate 3 or 2 F32T8.
9. Will also operate 2 or 1 F40T8.
10. Will also operate 3 or 2 F17T8.
11. Will also operate 2 or 1 F17T8.

F208/F308

111-30

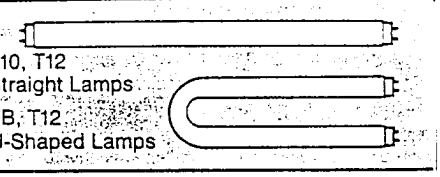
RAPID START

Lamp Data		Circuit (Volts)	Min. Starting Temp. (°F.)	Catalog Number (All Class P)†	Notes	Electrical Data		Sound Rating	Dimensions (Page 22)	Wiring Diagram No. (Page 24)	Shipping Data	
Description	Watts					Line Current (Amps)	Input ANSI (Watts)				Units† Std. Ctn.	Weight Std. Ctn. (Lbs.)
One Lamp—Normal Power Factor												
(1) F30T12. (1) F40T12	30 40	120	50	RL-140-TP	2,8,42	.65	35	A	R-4	16	20	43
One Lamp—High Power Factor												
(1) F30T12	30	120	50	HM-1P30-TP REL-1S40-TP (Electronic)	1,2 2	.40 .26	46 31	A	T-2	20	10	33 15
			0	RC-1P40-TP	2,3	.38	45	A	R-5	20	10	36
		277	50	VM-1P30-TP VEL-1S40-TP (Electronic)	1 2	.18 .12	48 31	A	T-2	20	10	34 15
			0	VC-1P40-TP	2,3	.17	45	A	R-5	20	10	36
(1) F30 Energy Saver (460 mA)	25	120	60	HM-1P30-TP REL-1S40-TP (Electronic)	2 2	.36 .23	41 26	A	T-2	20	10	33 15
		277	60	VM-1P30-TP VEL-1S40-TP (Electronic)	2	.16 .10	42 27	A	T-2	20	10	34 15
(1) F40T10, (1) F40T12	40	120	50	HM-140-TP RM-140-TP (Mark II) R-140-TP (Mark III)	1,2,7,10 1,2,7,10 Ⓔ 1,2,10	.48 .46 .43	57 55 50	A	T-2	20	10	33 33 36
				REL-1S40-TP (Electronic) RIC-140-TP (Electronic IC) RK-134-TP	Ⓔ 2 Ⓔ 2,5 Ⓔ 2,6,45,10	.32 .30 .38	36 36 45	A	T-2	20	10	15 15 38
			0	RC-1P40-TP	2,3	.46	53	A	R-5	20	10	38
		220	50	XHQM-1P40-TP	4	.24	54	A	T-2	20	10	34
		240	50	YHQM-1P40-TP	4	.23	54	A	T-2	20	10	35
		277	50	VS-140-TP VM-140-TP (Mark II) V-140-TP (Mark III)	1,2,7,10 1,2,7,10 Ⓔ 1,2,10	.21 .20 .185	57 55 50	A	T-2	20	10	34 37 38
				VEL-1S40-TP (Electronic) VIC-140-TP (Electronic IC) VK-134-TP	Ⓔ 2 Ⓔ 2,5 Ⓔ 6,45,10	.14 .13 .17	36 38 45	A	T-2	20	10	15 15 38
			0	VC-1P40-TP	2,3	.20	53	A	R-5	20	10	40
(1) F40 Energy Saver (460 mA)	34	120	60	HM-140-TP * RM-140-TP (Mark II) R-140-TP (Mark III)	1,2,7,10,41 1,2,7,10,41 Ⓔ 1,2,10,41	.44 .42 .38	50 48 43	A	T-2	20	10	33 36 38
				REL-1S40-TP (Electronic) RIC-140-TP (Electronic IC) RK-134-TP	Ⓔ 2 Ⓔ 2,5 Ⓔ 6,45,10	.27 .26 .32	32 31 37	A	T-2	20	10	15 15 38
		277	60	VS-140-TP VM-140-TP (Mark II) V-140-TP (Mark III)	1,2,7,10,41 1,2,7,10,41 Ⓔ 1,2,10,41	.19 .18 .16	50 48 43	A	T-2	20	10	34 37 38
				VEL-1S40-TP (Electronic) VIC-140-TP (Electronic IC) VK-134-TP	Ⓔ 2 Ⓔ 2,5 Ⓔ 6,45,10	.12 .11 .14	31 31 37	A	T-2	20	10	15 15 38
(1) F40CW/U, (1) FB40T12	40	120	50	R-1U40-TP (Mark III)	Ⓔ 1,2	.43	50	A	T-2	20	10	38
		277	50	V-1U40-TP (Mark III)	Ⓔ 1	.185	50	A	T-2	20	10	38

NOTES: ⒺComplIes with National Energy Conservation Amendments (NAECA) of 1988 to Energy Policy and Conservation Act (EPCA) of 1987. **1.** CBM Approved. **2.** CSA Approved. **3.** Also operates 32W Circline lamp. **4.** Not UL listed. **5.** Mark V Integrated Circuit electronic ballast. **6.** Powrkut™ and Powrkut™ Companion Design ballasts deliver approximately 8–10% less light than energy saving CBM ballasts operating energy saving lamps.

7. Manufacture discontinued Jan. 1, 1990 for NAECA compliance. **8.** Requires circuit-interrupting lamp holders. **10.** Not suitable for use with U-shaped lamps. **41.** Also operates Energy Saver Plus lamps. **42.** May be used with F40 lamps for residential use only, per NAECA of 1988. **45.** Powrkut™ Companion Design.

†Ordering Information: Units shown are furnished with Class P ADVAN-guard® Automatic Resetting Thermostat. Units packed in Individual Cartons—Add suffix—I.



Lamp Data		Circuit (Volts)	Min. Starting Temp. (°F)	Catalog Number (All Class P)†	Notes	Electrical Data		Sound Rating	Dimensions (Page 22)	Wiring Diagram Nos. (Page 24)	Shipping Data	
Description	Watts					Line Current (Amps)	Input ANSI (Watts)				Units/ Std. Ctn.	Weight Std. Ctn. (Lbs.)
Two Lamps—High Power Factor												
(2) F30T12	30	120	50	RM-2SP30-TP	1,2	.68	81	A	T-2	21	10	35
				R-2SP30-TP (Mark III)	1	.63	74					35
				REL-2S40-TP (Electronic)	2,48	.54	60					15
			0	RC-2SP40-TP	2	.75	79	B	R-5	21	10	39
		277	50	VM-2SP30-TP	1	.30	81	A	T-2	21	10	35
				V-2SP30-TP (Mark III)	1	.28	74					35
				VEL-2S40-TP (Electronic)	2,48	.23	60					15
			0	VC-2SP40-TP	2	.33	79	B	R-5	21	10	39
(2) F30 Energy Savers (460 mA)	25	120	60	RM-2SP30-TP	2	.63	73	A	T-2	21	10	38
				R-2SP30-TP (Mark III)		.58	66					35
				REL-2S40-TP (Electronic)	2,48	.44	50					15
				RK-2S34-TP (Powrkut)	2,6	.42	49					38
		277	60	VM-2SP30TP		.27	73	A	T-2	21	10	38
				V-2SP30TP (Mark III)		.25	66					35
				VEL-2S40-TP (Electronic)	2,48	.20	50					15
				VK-2S34-TP (PowrKut)	6	.18	49					38
(2) F40T12, (2) F40T10, (2) FB40T12	40	120	50	R-2S35-TP	2,47	.70	74	A	T-2	21	10	34
				RQM-2S40-TP	1,2,7	.80	96					33
				RS-2S40-TP (Mark I)	1,2,7	.79	94					34
				RM-2S40-TP (Mark II)	1,2,7	.77	92					35
				R-2S40-TP (Mark III)	Ⓔ 1,2	.73	86					37
			50	REL-2S40-TP (Electronic)	Ⓔ 2,48	.65	71	A	T-2	21	10	15
				RIC-2S40-TP (Electronic IC)	Ⓔ 2,5,49	.61	72					15
				RK-2S34-TP (PowrKut)	Ⓔ 2,6	.62	71					38
				RK-2S40-TP (PowrKut Mark IV)	Ⓔ	.69	80					38
			0	RC-2SP40-TP	2	.75	90	B	R-5	21	10	38
		220	50	XQM-2S40-TP	2	.45	96	B	T-2	21	10	34
		240	50	YQM-2S40-TP	2	.42	96	B	T-2	21	10	34
		277	50	VQM-2S40-TP	1,2,7	.35	96	A	T-2	21	10	33
				VS-2S40-TP (Mark I)	1,2,7	.34	94					35
				VM-2S40-TP (Mark II)	1,2,7	.34	92					36
				V-2S40-TP (Mark III)	Ⓔ 1,2	.32	86					37
			50	VEL-2S40-TP (Electronic)	Ⓔ 2,48	.28	71	A	T-2	21	10	15
				VIC-2S40-TP (Electronic IC)	Ⓔ 2,5,49	.26	72					15
				VK-2S34-TP (PowrKut)	Ⓔ 6	.28	71					38
				VK-2S40-TP (PowrKut Mark IV)	Ⓔ	.31	80					38
			0	VC-2SP40-TP	2	.33	90	B	R-5	21	10	38
(2) F40, (2) F40/U, Energy Savers (460 mA)	34	120	60	RQM-2S40-TP *	1,2,7,41	.72	82	A	T-2	21	10	33
				RS-2S40-TP (Mark I)	1,2,7,41	.70	80					34
				RM-2S40-TP (Mark II)	1,2,7,41	.68	78					35
				R-2S40-TP (Mark III)	Ⓔ 1,2,41	.63	72					37
			60	REL-2S40-TP (Electronic)	Ⓔ 2,48	.54	59	A	T-2	21	10	15
				RIC-2S40-TP (Electronic IC)	Ⓔ 2,5,49	.51	60					15
				RK-2S34-TP (PowrKut)	Ⓔ 2,6	.49	58					38
				RK-2S40-TP (PowrKut Mark IV)	Ⓔ	.57	66					38
		240	60	YQM-2S40-TP	2	.36	82	B	T-2	21	10	34
		277	60	VQM-2S40-TP	1,2,7,41	.31	82	A	T-2	21	10	34
				VS-2S40-TP (Mark I)	1,2,7,41	.31	80					35
				VM-2S40-TP (Mark II)	1,2,7,41	.30	78					36
				V-2S40-TP (Mark III)	Ⓔ 1,2,41	.27	72					37
			60	VEL-2S40-TP (Electronic)	Ⓔ 2,48	.23	59	A	T-2	21	10	15
				VIC-2S40-TP (Electronic IC)	Ⓔ 2,5,49	.22	60					15
				VK-2S34-TP (PowrKut)	Ⓔ 6	.21	58					38
				VK-2S40-TP (PowrKut Mark IV)	Ⓔ	.26	66					38

NOTES: ⒺComplIes with National Energy Conservation Amendments (NAECA) of 1988 to Energy Policy and Conservation Act (EPCA) of 1987. 1. CBM Approved. 2. CSA Approved. 5. Mark V Integrated Circuit electronic ballast. 6. Powrkut™ and Powrkut™ Companion Design ballasts deliver approximately 8–10% less light than energy saving CBM ballasts operating energy saving lamps. 7. Manufacture discontinued Jan. 1. 1990 for NAECA compliance. 41. Also operates Energy Saver Plus lamps. 47. Reduced light output. For residential use only. 48. Remote Mounting—Ballasts manufactured prior to September 1, 1991 (date coded 3691 or lower number) only single *"blue"* lamp lead may be remote mounted, maximum lead length 20 ft. Ballasts manufactured after September 1, 1991 (date code greater number than 3691) only single *"red"* lamp lead may be remote mounted, maximum lead length 20 ft. 49. Remote Mounting—One or two lamp remote mounting. For single lamp remote mounting, only "red lead" lamp can be mounted remote from fixture. Maximum remote mounting, 20 ft. lead length.

†Ordering Information: Units shown are furnished with Class P ADVAN-guard® Automatic Resetting Thermostat. Units packed in Individual Cartons—Add suffix—I.

High Pressure Sodium Lamps – Lucalox® (continued)

Applications

Lucalox lamps are ideal for many industrial, roadway, outdoor/area, security, and architectural floodlighting applications.

Operating Position

Universal.

Wattage Range: 50 - 1000

HP50 / HP70

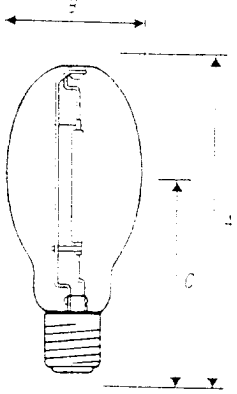


Fig. 1

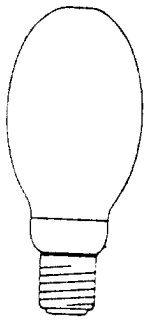


Fig. 2

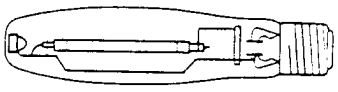


Fig. 5



Fig. 6

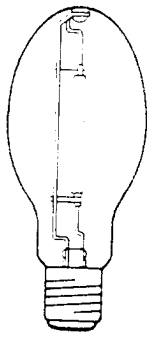


Fig. 3

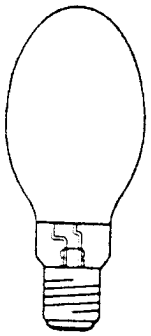


Fig. 4

Watts	MOL in. (mm)	LCL in. (mm)	Order Code	Description	ANSI Code (Ref. Only)	Case Quantity	Life	Reference Lumens Int.	Reference Lumens Mean	Color Temp. K	CRI	Additional Information
E18 Diameter 2¼" (57 mm) Mogul (E39) Base Fig. 5												
200	9 3/4 (248)	5 3/4 (146)	44206	LU200	S66MN-200	12	24000+	22000	19800	2100	22	Clear (2)
250	9 3/4 (248)	5 3/4 (146)	44047	LU250	S50VA-250	12	24000+	25000	27000	2100	22	Clear (1)
250	9 3/4 (248)	5 3/4 (146)	44049	LU250/S	S50VA-250/S	12	24000+	26000	28000	2100	22	Clear (3)
310	9 3/4 (248)	5 3/4 (146)	44053	LU310	S67MR-310	12	24000+	31000	33300	2100	22	Clear (2)
400	9 3/4 (248)	5 3/4 (146)	44054	LU400	S51WA-400	12	24000+	45000	45000	2100	22	Clear (2)
E23½ Diameter 2 15/16" (75 mm) Mogul (E39) Base Fig. 1 Clear, Fig. 2 Diffuse												
50	7 3/4 (197)	5 (127)	44975	LU50 *	S68MS-50	12	24000+	4000	3600	1900	22	Clear (3) HP50
50	7 3/4 (197)	5 (127)	45006	LU50/O	S68MT-50	12	24000+	3600	3420	1900	22	Diffuse (3)
70	7 3/4 (197)	5 (127)	44023	LU70 *	S62ME-70	12	24000+	5400	5450	1900	22	Clear (3) HP70
70	7 3/4 (197)	5 (127)	44035	LU70/O	S62MF-70	12	24000+	5950	5650	1900	22	Diffuse (3)
70	7 3/4 (197)	5 (127)	14110	LU70/O	5PK S62MF-70	5	24000+	5950	5650	1900	22	Diffuse—Consumer Pack (3)
100	7 3/4 (197)	5 (127)	44037	LU100	S54SB-100	12	24000+	9500	9550	2000	22	Clear (3)
100	7 3/4 (197)	5 (127)	44038	LU100/O	S54MC-100	12	24000+	8300	7920	2000	22	Diffuse (3)
150	7 3/4 (197)	5 (127)	44043	LU150/55	S55SC-150	12	24000+	15000	14400	2000	22	Clear (2)
150	7 3/4 (197)	5 (127)	44045	LU150/55/O	S55MD-150	12	24000+	15000	15500	2000	22	Diffuse (2, 10)
E25 Diameter 3⅛" (80 mm) Mogul (E39) Base Fig. 6												
1000	15 1/16 (383)	8 3/4 (222)	44058	LU1000	S52XB-1000	6	24000+	140000	126000	2100	22	Clear (3)
E28 Diameter 3½" (89 mm) Mogul (E39) Base Fig. 3 Clear, Fig. 4 Diffuse												
150	8 5/16 (211)	5 (127)	44243	LU150/100	S56SD-150	12	24000+	15000	13500	2000	22	Clear (2, 11)
150	8 5/16 (211)	5 (127)	18245	LU150/100/O	S56SE-150	12	24000+	14000	12600	2000	22	Diffuse (2, 11)
250	9 (229)	5 (127)	44051	LU250/O	S50VC-250	12	24000+	26000	23400	2100	22	Diffuse (1)
E37 Diameter 4⅝" (118 mm) Mogul (E39) Base Fig. 2												
400	11 5/16 (287)	7 (178)	44056	LU400/O	S51WB-400	6	24000+	47500	42750	2100	22	Diffuse (2)

Photometrics

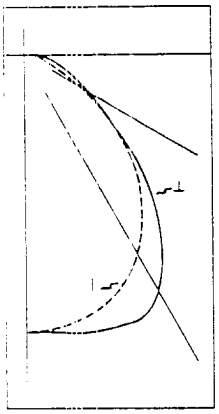
2GMASF-SS-232A

Electronic Ballast. F32T8/841K lamps rated at 2900 lumens. Spacing criterion: (||) 1.2 x mounting height, (⊥) 1.3 x mounting height

For complete photometric report request 2GMASF-SS-232A report #159P101. Efficiency = 69.6%

Coefficients of Utilization

pfc	20%																		
pcc	80%				70%				50%			30%			10%			0%
pw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	83	83	83	83	81	81	81	81	8178	78	78	74	74	74	71	71	71	70
1	77	74	72	70	75	73	71	69	70	68	66	67	65	64	65	64	62	61
2	72	67	63	59	70	65	62	59	63	60	57	61	58	56	59	57	55	53
3	66	60	55	51	65	59	54	51	57	53	50	55	52	49	53	51	48	47
4	61	54	49	45	60	53	48	44	52	47	44	50	46	43	49	45	43	41
5	57	49	43	39	55	48	43	39	46	42	38	45	41	38	44	40	37	36
6	53	44	38	34	51	43	38	34	42	37	34	41	37	34	40	36	33	32
7	49	40	34	30	47	39	34	30	38	33	30	37	33	30	36	33	30	28
8	45	36	30	27	44	36	30	26	35	30	26	34	29	26	33	29	26	25
9	41	32	27	23	40	32	27	23	31	26	23	30	26	23	30	26	23	22
10	39	30	24	21	38	29	24	21	28	24	20	28	23	20	27	23	20	19



Candlepower

Angle	Along ||	45°	Across ⊥
0	1721	1721	1721
5	1716	1721	1732
10	1692	1721	1751
15	1651	1713	1770
20	1590	1691	1784
25	1504	1646	1766
30	1396	1558	1658
35	1265	1411	1464
40	1100	1218	1223
45	905	991	972
50	713	760	757
55	553	550	571
60	421	371	409
65	313	239	309
70	255	172	256
75	208	152	213
80	141	123	151
85	73	69	81
90	0	0	0

Zonal Lumen Summary

F208 | SIMILAR TO

Zone	Lumens	%Lamp	%Fixture
0- 30	1404	24.2	34.6
0- 40	2267	39.1	55.9
0- 60	3515	60.6	86.6
0- 90	4056	69.9	100.0
0-180	4056	69.9	100.0

Typical VCP Percentages

Room Size (Ft.)	Height Along 8.5'	Height Along 10.0'	Height Across 8.5'	Height Across 10.0'
20 x 20	76	80	76	80
30 x 30	69	74	69	74
30 x 60	60	64	60	63
60 x 30	71	75	71	75
60 x 60	61	64	60	63

Ordering Information

Example 2GMASF-SS-240A

	2	G	M	A		SF	SS	2	40	A		LE3

Add desired options to catalog number in the order listed below.

HR Heat Removal
D Heat Removal Control Damper

2' Width

Trim Type – Consult Factory
G Grid/Lay-in – Standard
GorT Concealed T
GorT Slot Grid
F Flange Trim
MZ Modular Trim
Convertible Fixture Standard G (Gnd) Type-Fixtures can be field converted to T-option or vice-versa. Fixture also adaptable with flanged or modular trims.

Series
A-For Air Handling Floating Door, Black Reveal
B-For Non-Air Handling Floating Door, Black Reveal
V-Directional Air Vane For Use With Air Handling Fixture Only

SF Flat Floating White Steel Door (Standard)
XF[1] Flat Floating White Aluminum Door
SR 5/16" Regressed Floating White Steel Door
XR[2] 5/16" Regressed Floating Natural Aluminum Door
XRD 5/8" Deep Regressed Floating Extruded Natural Aluminum Door
(Self-camming spring loaded latches on XF and XRD)
** Flat Natural Aluminum Door Available - **NDF** (See Options)
(1) Flat, Floating White Extruded Aluminum Door Frame Available - Add Suffix (EDF).
(2) 3/8" Regressed, Floating, Natural Anodized Extruded Aluminum Door Frame Available - Add Suffix (EDF).

Silver Finish

Number of Lamps (Not Included)

Wattage (Length)
40-40 W (48")
32-32 W (48")

A #12 Pattern Acrylic
A125 #12 Pattern Acrylic (.125" thick)
A19/156 #19 Pattern Acrylic (.156" thick)
IMA 48 Injection Molded Acrylic (.150" thick)
RAD 2 Batwing Distribution
PB1S Silver Parabolic Louver 1/2"x1/2"x1/2"
DA Drooped Dish – Matte White Acrylic

Additional Shielding Media Available. See Accessory Section.

Voltage
120V or 277V
Consult Factory

LE3 Energy Saving Ballast [E]
LEOC8 Energy Saving Ballast (For T-8 Lamps Only)
EB Generic Electronic Ballast
No. of Ballasts 1 or 2
Lamp Size 2- T12 8- T8
(For Specific Electronic Ballast Specify Brand and Catalog Number)

GL Internal Single Element Fusing
NDF** Flat Natural Anodized Aluminum Door
EDF[1,2] Flat White Floating Extruded Aluminum Door (Consult Factory For Fixture Specs.)
LCWM/ ES2 F40/Cool White Energy Saving Lamps, Installed
EL4 Emergency Lighting self-contained
RIF1 Radio Interference Suppressor
FR Suitable for Fire Rated Applications
EQ T-BAR Safety Earthquake Clips
MEP Modified End Plate/For End Filler Applications (See Accessory Section)

Additional Options and Accessories Available. See Accessory Section.

Shipping Information
Catalog No. **Wt.**
2GMASF-SS-240A 29 lbs.
Applies to all door frame styles.

Specifications & Dimensions subject to change without notice. (6/93) ADV890402-A/93

METALUX
P.O. Box 1207
Americus, Georgia 31709
912-924-8000
Fax 912-924-5507

COOPER
Cooper Lighting

Approval

111-34

Job Information

IV. Miscellaneous Data

- Life Cycle Cost Analyses (LCCID)
- DD Form 1391
- Project Development Brochure (PDB)
- Light Meter Calibration
- Coefficients of Utilization for Fixtures
- UV Output Data for HID & Fluorescent Lighting

Life Cycle Cost Analyses (LCCID)

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA2
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA2, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 91033.	
B. SIOH	$ 5007.	
C. DESIGN COST	$ 5462.	
D. TOTAL COST (1A+1B+1C)	$ 101502.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 101502.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	48.	$ 1488.	12.43	$ 18502.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1986.	11.85	$ 23535.
N. TOTAL		48.	$ 3475.		$ 42037.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ -624.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ -7394.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 44545.	0	1.00	44545.
d. TOTAL	$ 44545.			44545.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 37151.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 5820.

5. SIMPLE PAYBACK PERIOD (1G/4) 17.44 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 79187.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= .78
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA2

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY

FISCAL YEAR 1994 DISCRETE PORTION NAME: BA2, ALT 3

ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 99780.	
B. SIOH	$ 5488.	
C. DESIGN COST	$ 5987.	
D. TOTAL COST (1A+1B+1C)	$ 111255.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 111255.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	48.	$ 1501.	12.43	$ 18655.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2003.	11.85	$ 23733.
N. TOTAL		48.	$ 3504.		$ 42388.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 2835.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 33595.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 44545.	0	1.00	44545.
d. TOTAL	$ 44545.			44545.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 78140.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 9308.

5. SIMPLE PAYBACK PERIOD (1G/4) 11.95 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 120528.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.08

(IF < 1 PROJECT DOES NOT QUALIFY)

**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBA2
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA2, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 78263.		
B. SIOH	$ 4305.		
C. DESIGN COST	$ 4696.		
D. TOTAL COST (1A+1B+1C)	$ 87264.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 87264.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	46.	$ 1434.	12.43	$ 17823.
B. DIST	$ .00	0.	$ 0.	13.36	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.36	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1913.	11.85	$ 22673.
N. TOTAL		46.	$ 3347.		$ 40496.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ -645.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ -7643.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 44545.	0	1.00	44545.
d. TOTAL	$ 44545.			44545.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 36902.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 5672.

5. SIMPLE PAYBACK PERIOD (1G/4) 15.39 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 77398.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= .89
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA2
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA2, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 87009.		
B. SIOH	$ 4786.		
C. DESIGN COST	$ 5221.		
D. TOTAL COST (1A+1B+1C)	$ 97016.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 97016.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	46.	$ 1446.	12.43	$ 17976.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1930.	11.85	$ 22869.
N. TOTAL		46.	$ 3376.		$ 40845.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 2614.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 33946.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 44545.	0	1.00	44545.
d. TOTAL	$ 44545.			44545.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 77891.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 9160.

5. SIMPLE PAYBACK PERIOD (1G/4) — 10.59 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 118736.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.22
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA2
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA2, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 98390.		
B. SIOH	$ 5412.		
C. DESIGN COST	$ 5904.		
D. TOTAL COST (1A+1B+1C)	$ 109706.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 109706.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	58.	$ 1827.	12.43	$ 22708.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2438.	11.85	$ 28887.
N. TOTAL		58.	$ 4265.		$ 51595.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 2831.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 33547.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 44545.	0	1.00	44545.
d. TOTAL	$ 44545.			44545.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 78092.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 10065.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.90 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 129687.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.18
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBA3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA3, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 139064.		
B. SIOH	$ 7649.		
C. DESIGN COST	$ 8344.		
D. TOTAL COST (1A+1B+1C)	$ 155057.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	155057.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	69.	$ 2169.	12.43	$ 26958.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2893.	11.85	$ 34286.
N. TOTAL		69.	$ 5062.		$ 61244.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 1108.
(1) DISCOUNT FACTOR (TABLE A)	11.85		
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 13130.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 45073.	0	1.00	45073.
d. TOTAL	$ 45073.			45073.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 58203.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 9175.

5. SIMPLE PAYBACK PERIOD (1G/4) 16.90 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 119447.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= .77
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA3

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY

FISCAL YEAR 1994 DISCRETE PORTION NAME: BA3, ALT 3

ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 146308.		
B. SIOH	$ 8047.		
C. DESIGN COST	$ 8779.		
D. TOTAL COST (1A+1B+1C)	$ 163134.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	163134.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	72.	$ 2250.	12.43	$ 27963.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 3002.	11.85	$ 35569.
N. TOTAL		72.	$ 5251.		$ 63534.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 4378.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 51879.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 45073.	0	1.00	45073.
d. TOTAL	$ 45073.			45073.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)	$	96952.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))	$	12634.
5. SIMPLE PAYBACK PERIOD (1G/4)		12.91 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)	$	160486.
7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)=		.98

(IF < 1 PROJECT DOES NOT QUALIFY)

**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA3, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 81552.		
B. SIOH	$ 4486.		
C. DESIGN COST	$ 4894.		
D. TOTAL COST (1A+1B+1C)	$ 90932.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 90932.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	54.	$ 1703.	12.43	$ 21162.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 3002.	11.85	$ 35569.
N. TOTAL		54.	$ 4704.		$ 56731.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 792.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 9383.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 45073.	0	1.00	45073.
d. TOTAL	$ 45073.			45073.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 54458.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 8501.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.70 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 111189.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.22
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA3, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 96898.		
B. SIOH	$ 5330.		
C. DESIGN COST	$ 5814.		
D. TOTAL COST (1A+1B+1C)	$ 108042.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 108042.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	57.	$ 1784.	12.43	$ 22169.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2379.	11.85	$ 28196.
N. TOTAL		57.	$ 4163.		$ 50365.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 4191.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 49663.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 45073.	0	1.00	45073.
d. TOTAL	$ 45073.			45073.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 94736.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 11359.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.51 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 145101.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.34
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA3, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 145232.		
B. SIOH	$ 7988.		
C. DESIGN COST	$ 8714.		
D. TOTAL COST (1A+1B+1C)	$ 161934.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	161934.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	80.	$ 2502.	12.43	$ 31109.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 3339.	11.85	$ 39562.
N. TOTAL		80.	$ 5841.		$ 70667.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 4343.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 51465.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 45073.	0	1.00	45073.
d. TOTAL	$ 45073.			45073.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 96538.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 13189.

5. SIMPLE PAYBACK PERIOD (1G/4) — 12.28 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 167205.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.03
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA4
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA4, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 149246.		
B. SIOH	$ 8209.		
C. DESIGN COST	$ 8955.		
D. TOTAL COST (1A+1B+1C)	$ 166410.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 166410.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	120.	$ 3742.	12.43	$ 46514.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.66	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4548.	11.85	$ 53889.
N. TOTAL		120.	$ 8290.		$ 100404.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 2591.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 30703.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 99303.	0	1.00	99303.
d. TOTAL	$ 99303.			99303.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 130006.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 17501.

5. SIMPLE PAYBACK PERIOD (1G/4) — 9.51 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 230410.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.38
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA4
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA4, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 156561.		
B. SIOH	$ 8611.		
C. DESIGN COST	$ 9394.		
D. TOTAL COST (1A+1B+1C)	$ 174566.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 174566.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	119.	$ 3727.	12.43	$ 46328.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4528.	11.85	$ 53654.
N. TOTAL		119.	$ 8255.		$ 99983.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 3546.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 101270.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 99303.	0	1.00	99303.
d. TOTAL	$ 99303.			99303.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 200573.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 23421.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.45 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 300556.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.72
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA4
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA4, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 138823.		
B. SIOH	$ 7636.		
C. DESIGN COST	$ 8330.		
D. TOTAL COST (1A+1B+1C)	$ 154789.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 154789.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	107.	$ 3332.	12.43	$ 41412.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4446.	11.85	$ 52680.
N. TOTAL		107.	$ 7777.		$ 94093.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 2560.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 30336.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 99303.	0	1.00	99303.
d. TOTAL	$ 99303.			99303.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 129639.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 16957.

5. SIMPLE PAYBACK PERIOD (1G/4) — 9.13 YEAR

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 223732.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.45
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAP8A4
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA4, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 153723.		
B. SIOH	$ 8455.		
C. DESIGN COST	$ 9224.		
D. TOTAL COST (1A+1B+1C)	$ 171402.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 171402.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	105.	$ 3271.	12.43	$ 40664.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4366.	11.85	$ 51731.
N. TOTAL		105.	$ 7637.		$ 92395.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 6328.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 98687.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 99303.	0	1.00	99303.
d. TOTAL	$ 99303.			99303.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 197990.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 22585.

5. SIMPLE PAYBACK PERIOD (1G/4) — 7.59 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 290385.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.69
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA4
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA4, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 157525.		
B. SIOH	$ 8664.		
C. DESIGN COST	$ 9452.		
D. TOTAL COST (1A+1B+1C)	$ 175641.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	175641.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	138.	$ 4323.	12.43	$ 53740.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 5324.	11.85	$ 63086.
N. TOTAL		138.	$ 9647.		$ 116826.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 8046.
(1) DISCOUNT FACTOR (TABLE A)	11.85		
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 98900.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 99303.	0	1.00	99303.
d. TOTAL	$ 99303.			99303.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 198203.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 24613.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.14 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 315029.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.79
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA6
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA6, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 3305.		
B. SIOH	$ 182.		
C. DESIGN COST	$ 199.		
D. TOTAL COST (1A+1B+1C)	$ 3686.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 3686.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	3.	$ 83.	12.43	$ 1033.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	13.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 111.	11.85	$ 1319.
N. TOTAL		3.	$ 194.		$ 2352.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 67.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 794.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 3520.	0	1.00	3520.
d. TOTAL	$ 3520.			3520.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 4314.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 496.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.43 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 6666.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.81
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

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LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA6
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA6, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 3702.		
B. SIOH	$ 204.		
C. DESIGN COST	$ 223.		
D. TOTAL COST (1A+1B+1C)	$ 4129.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	4129.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	3.	$ 78.	12.43	$ 975.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 105.	11.85	$ 1245.
N. TOTAL		3.	$ 184.		$ 2220.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 216.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 2560.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 3520.	0	1.00	3520.
d. TOTAL	$ 3520.			3520.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 6080.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 634.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.51 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 8300.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 2.01
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA6
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA6, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	3305.	
B. SIOH	$	182.	
C. DESIGN COST	$	199.	
D. TOTAL COST (1A+1B+1C)	$	3686.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 3686.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	3.	$ 83.	12.40	$ 1030.
B. DIST	$ .00	0.	$ 0.	13.36	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 111.	11.85	$ 1319.
N. TOTAL		3.	$ 194.		$ 2352.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 67.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 794.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 3520.	0	1.00	3520.
d. TOTAL	$ 3520.			3520.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 4314.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 496.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.43 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 6666.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.81
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBA6
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA6, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 3702.	
B. SIOH	$ 204.	
C. DESIGN COST	$ 223.	
D. TOTAL COST (1A+1B+1C)	$ 4129.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 4129.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	3.	$ 78.	12.43	$ 979.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.66	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 105.	11.85	$ 1245.
N. TOTAL		3.	$ 184.		$ 2220.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 216.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 2560.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 3520.	0	1.00	3520.
d. TOTAL	$ 3520.			3520.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 6080.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 634.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.51 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 8300.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 2.01
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBA6
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BA6, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	3620.	
B. SIOH	$	199.	
C. DESIGN COST	$	218.	
D. TOTAL COST (1A+1B+1C)	$	4037.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 4037.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	3.	$ 98.	12.43	$ 1213.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 130.	11.85	$ 1542.
N. TOTAL		3.	$ 228.		$ 2755.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 214.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 2536.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 3520.	0	1.00	3520.
d. TOTAL	$ 3520.			3520.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 6056.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 676.

5. SIMPLE PAYBACK PERIOD (1G/4) 5.97 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 8811.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 2.18
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB10
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB10, ALT 2
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 9363.		
B. SIOH	$ 515.		
C. DESIGN COST	$ 562.		
D. TOTAL COST (1A+1B+1C)	$ 10440.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 10440.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	8.	$ 241.	12.43	$ 2992.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	13.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 321.	11.85	$ 3810.
N. TOTAL		8.	$ 562.		$ 6801.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 62.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 735.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 5613.	0	1.00	5613.
d. TOTAL	$ 5613.			5613.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 6348.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 998.

5. SIMPLE PAYBACK PERIOD (1G/4) — 10.46 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 13149.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.26
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

IV-23

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB10
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB10, ALT 3
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 10488.		
B. SIOH	$ 577.		
C. DESIGN COST	$ 630.		
D. TOTAL COST (1A+1B+1C)	$ 11695.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 11695.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	7.	$ 227.	12.43	$ 2827.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 304.	11.85	$ 3600.
N. TOTAL		7.	$ 531.		$ 6427.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)
(1) DISCOUNT FACTOR (TABLE A) 11.85 — $ 484.
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 5735.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 5613.	0	1.00	5613.
d. TOTAL	$ 5613.			5613.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 11348.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 1389.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.42 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 17776.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.52
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB10
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB10, ALT 4
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	9363.	
B. SIOH	$	515.	
C. DESIGN COST	$	562.	
D. TOTAL COST (1A+1B+1C)	$	10440.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 10440.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	8.	$ 241.	12.43	$ 2992.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 322.	11.85	$ 3810.
N. TOTAL		8.	$ 562.		$ 6802.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 62.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 735.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 5613.	0	1.00	5613.
d. TOTAL	$ 5613.			5613.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 6348.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 998.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.46 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 13149.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.26
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAP8B10
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB10, ALT 5
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 10488.		
B. SIOH	$ 577.		
C. DESIGN COST	$ 630.		
D. TOTAL COST (1A+1B+1C)	$ 11695.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	11695.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	7.	$ 227.	12.43	$ 2827.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 304.	11.85	$ 3600.
N. TOTAL		7.	$ 531.		$ 6427.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 484.
(1) DISCOUNT FACTOR (TABLE A)	11.85		
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 5735.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 5613.	0	1.00	5613.
d. TOTAL	$ 5613.			5613.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 11348.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 1389.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.42 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 17776.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.52
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB10

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY

FISCAL YEAR 1994 DISCRETE PORTION NAME: BB10, ALT 6

ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 10256.		
B. SIOH	$ 564.		
C. DESIGN COST	$ 616.		
D. TOTAL COST (1A+1B+1C)	$ 11436.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 11436.	

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	9.	$ 282.	12.43	$ 3503.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.04	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 376.	11.85	$ 4451.
N. TOTAL		9.	$ 657.		$ 7954.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 476.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 5641.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 5613.	0	1.00	5613.
d. TOTAL	$ 5613.			5613.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 11254.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 1508.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.59 YEAR

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 19207.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.68
(IF < 1 PROJECT DOES NOT QUALIFY)

**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB812
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: 8812, ALT 2
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 29447.		
B. SIOH	$ 1620.		
C. DESIGN COST	$ 1767.		
D. TOTAL COST (1A+1B+1C)	$ 32834.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 32834.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	30.	$ 949.	12.43	$ 11797.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.36	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1266.	11.85	$ 15004.
N. TOTAL		30.	$ 2215.		$ 26802.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 1182.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 14007.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 29270.	0	1.00	29270.
d. TOTAL	$ 29270.			29270.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 43277.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 5349.

5. SIMPLE PAYBACK PERIOD (1G/4) — 6.14 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 70079.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= — 2.13
(IF < 1 PROJECT DOES NOT QUALIFY)

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): — 8.44 %

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB12
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.060
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB12, ALT 3
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 32080.		
B. SIOH	$ 1765.		
C. DESIGN COST	$ 1925.		
D. TOTAL COST (1A+1B+1C)	$ 35770.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	35770.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	29.	$ 909.	12.43	$ 11293.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1212.	11.85	$ 14363.
N. TOTAL		29.	$ 2121.		$ 25657.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 2474.
(1) DISCOUNT FACTOR (TABLE A)	11.85		
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 29317.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 29270.	0	1.00	29270.
d. TOTAL	$ 29270.			29270.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 58587.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 6546.

5. SIMPLE PAYBACK PERIOD (1G/4) 5.46 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 84244.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 2.36
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB12
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB12, ALT 4
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 29447.		
B. SIOH	$ 1620.		
C. DESIGN COST	$ 1767.		
D. TOTAL COST (1A+1B+1C)	$ 32834.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 32834.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	30.	$ 949.	12.43	$ 11797.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1266.	11.85	$ 15004.
N. TOTAL		30.	$ 2215.		$ 26802.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 1182.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 14007.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 29270.	0	1.00	29270.
d. TOTAL	$ 29270.			29270.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 43277.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 5349.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.14 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 70079.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 2.13
(IF < 1 PROJECT DOES NOT QUALIFY)

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 8.44 %

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAP8B12

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY

FISCAL YEAR 1994 DISCRETE PORTION NAME: BB12, ALT 5

ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 32080.		
B. SIOH	$ 1765.		
C. DESIGN COST	$ 1925.		
D. TOTAL COST (1A+1B+1C)	$ 35770.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	35770.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	29.	$ 909.	12.43	$ 11293.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.36	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1212.	11.85	$ 14363.
N. TOTAL		29.	$ 2121.		$ 25657.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 2474.

(1) DISCOUNT FACTOR (TABLE A) — 11.85

(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 29317.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 29270.	0	1.00	29270.
d. TOTAL	$ 29270.			29270.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 58587.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 6546.

5. SIMPLE PAYBACK PERIOD (1G/4) — 5.46 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 84244.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 2.36

(IF < 1 PROJECT DOES NOT QUALIFY)

**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBB12
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: 8B12, ALT 6
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	31372.
B. SIOH	$	1726.
C. DESIGN COST	$	1883.
D. TOTAL COST (1A+1B+1C)	$	34981.
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.
F. PUBLIC UTILITY COMPANY REBATE	$	0.
G. TOTAL INVESTMENT (1D - 1E - 1F)	$	34981.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	34.	$ 1075.	12.43	$ 13360.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1434.	11.85	$ 16989.
N. TOTAL		34.	$ 2509.		$ 30349.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 2450.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 29030.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 29270.	0	1.00	29270.
d. TOTAL	$ 29270.			29270.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 58303.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 6910.

5. SIMPLE PAYBACK PERIOD (1G/4) 5.06 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 88652.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 2.53
(IF < 1 PROJECT DOES NOT QUALIFY)

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 9.69 %

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB14
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB14, ALT 2
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 258855.		
B. SIOH	$ 14237.		
C. DESIGN COST	$ 15532.		
D. TOTAL COST (1A+1B+1C)	$ 288624.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 288624.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1990

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	182.	$ 5674.	12.43	$ 70523.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	13.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 7571.	11.85	$ 89716.
N. TOTAL		182.	$ 13245.		$ 160245.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 7656.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 90747.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 144172.	0	1.00	144172.
d. TOTAL	$ 144172.			144172.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 234919.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 30515.

5. SIMPLE PAYBACK PERIOD (1G/4) — 9.46 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 395165.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= — 1.37
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): — N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB14
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB14, ALT 3
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 274716.		
B. SIOH	$ 15110.		
C. DESIGN COST	$ 16483.		
D. TOTAL COST (1A+1B+1C)	$ 306309.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 306309.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	181.	$ 5639.	12.43	$ 70093.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 7524.	11.85	$ 89162.
N. TOTAL		181.	$ 13163.		$ 159255.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 13920.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 165047.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 144172.	0	1.00	144172.
d. TOTAL	$ 144172.			144172.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 309219.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 36703.

5. SIMPLE PAYBACK PERIOD (1G/4) — 8.35 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 468473.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.53
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB14
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB14, ALT 4
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 224604.		
B. SIOH	$ 12354.		
C. DESIGN COST	$ 13477.		
D. TOTAL COST (1A+1B+1C)	$ 250435.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 250435.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	152.	$ 4744.	12.43	$ 58960.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 6330.	11.85	$ 75008.
N. TOTAL		152.	$ 11074.		$ 133974.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 7284.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 86339.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 144172.	0	1.00	144172.
d. TOTAL	$ 144172.			144172.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 230511.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 27971.

5. SIMPLE PAYBACK PERIOD (1G/4) — 8.95 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 364485.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.46
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB14
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB14, ALT 5
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	240465.	
B. SIOH	$	13226.	
C. DESIGN COST	$	14428.	
D. TOTAL COST (1A+1B+1C)	$	268119.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 268119.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	151.	$ 4709.	12.43	$ 58530.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 6283.	11.85	$ 74454.
N. TOTAL		151.	$ 10992.		$ 132983.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 13470.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 159620.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 144172.	0	1.00	144172.
d. TOTAL	$ 144172.			144172.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 303792.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 34073.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.87 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 436775.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.63
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB14
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB14, ALT 6
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 271992.	
B. SIOH	$ 14960.	
C. DESIGN COST	$ 16320.	
D. TOTAL COST (1A+1B+1C)	$ 303272.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 303272.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	201.	$ 6278.	12.43	$ 78040.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 8377.	11.85	$ 99267.
N. TOTAL		201.	$ 14655.		$ 177308.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 13793.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 162973.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 144172.	0	1.00	144172.
d. TOTAL	$ 144172.			144172.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 307145.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 38020.

5. SIMPLE PAYBACK PERIOD (1G/4) — 7.98 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 484453.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= — 1.60
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): — N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBB18
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB18, ALT 2
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 208802.	
B. SIOH	$ 11485.	
C. DESIGN COST	$ 12529.	
D. TOTAL COST (1A+1B+1C)	$ 232816.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 232816.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	144.	$ 4498.	12.43	$ 55912.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 6001.	11.85	$ 71112.
N. TOTAL		144.	$ 10499.		$ 127024.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 5802.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 68754.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 109834.	0	1.00	109834.
d. TOTAL	$ 109834.			109834.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 178588.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 23623.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.86 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 305612.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.31
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB18
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB18, ALT 3
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 221575.		
B. SIOH	$ 12187.		
C. DESIGN COST	$ 13295.		
D. TOTAL COST (1A+1B+1C)	$ 247057.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 247057.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	144.	$ 4502.	12.43	$ 55955.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 6006.	11.85	$ 71173.
N. TOTAL		144.	$ 10508.		$ 127128.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 11166.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 132317.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 109834.	0	1.00	109834.
d. TOTAL	$ 109834.			109834.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 242151.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 28996.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.52 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 369279.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.49
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBB18
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB18, ALT 4
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 189541.	
B. SIOH	$ 10425.	
C. DESIGN COST	$ 11373.	
D. TOTAL COST (1A+1B+1C)	$ 211339.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 211339.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	122.	$ 3824.	12.43	$ 47533.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 5102.	11.85	$ 60460.
N. TOTAL		122.	$ 8927.		$ 107998.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 5532.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 65554.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 109834.	0	1.00	109834.
d. TOTAL	$ 109834.			109834.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 175388.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 21781.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.70 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 283386.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.34
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB18
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB18, ALT 5
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 203164.		
B. SIOH	$ 11174.		
C. DESIGN COST	$ 12190.		
D. TOTAL COST (1A+1B+1C)	$ 226528.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 226528.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	123.	$ 3828.	12.43	$ 47580.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 5107.	11.85	$ 60522.
N. TOTAL		123.	$ 8935.		$ 108102.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 10896.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 129118.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 109834.	0	1.00	109834.
d. TOTAL	$ 109834.			109834.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 238952.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 27153.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.34 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 347054.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.53
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBB18
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BB18, ALT 6
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 219355.		
B. SIOH	$ 12065.		
C. DESIGN COST	$ 13162.		
D. TOTAL COST (1A+1B+1C)	$ 244582.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 244582.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	161.	$ 5023.	12.43	$ 62432.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 6701.	11.85	$ 79409.
N. TOTAL		161.	$ 11724.		$ 141841.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 11094.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 131440.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 109834.	0	1.00	109834.
d. TOTAL	$ 109834.			109834.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 241274.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 30138.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.12 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 383115.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.57
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAMBDS

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY

FISCAL YEAR 1994 DISCRETE PORTION NAME: BD3, ALT 2

ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 168313.		
B. SIOH	$ 9258.		
C. DESIGN COST	$ 10099.		
D. TOTAL COST (1A+1B+1C)	$ 187670.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 187670.	

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	120.	$ 3754.	12.43	$ 46666.
B. DIST	$ .00	0.	$ 0.	13.36	$ 0.
C. RESID	$ .00	0.	$ 0.	13.03	$ 0.
D. NAT G	$ .00	0.	$ 0.	13.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 5010.	11.85	$ 59368.
N. TOTAL		120.	$ 8764.		$ 106034.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 4956.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 58746.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 101543.	0	1.00	101543.
d. TOTAL	$ 101543.			101543.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 159999.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 20467.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.17 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 266030.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.42
(IF < 1 PROJECT DOES NOT QUALIFY)

**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPB03

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3.

PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY

FISCAL YEAR 1994 DISCRETE PORTION NAME: BD3, ALT 3

ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 177568.		
B. SIOH	$ 9767.		
C. DESIGN COST	$ 10654.		
D. TOTAL COST (1A+1B+1C)	$ 197989.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 197989.	

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	120.	$ 3761.	12.43	$ 46749.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 5019.	11.85	$ 59474.
N. TOTAL		120.	$ 8780.		$ 106223.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 9035.

(1) DISCOUNT FACTOR (TABLE A) 11.85

(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 107057.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 101543.	0	1.00	101543.
d. TOTAL	$ 101543.			101543.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 209200.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 24634.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.04 YEAR

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 315423.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.59

(IF < 1 PROJECT DOES NOT QUALIFY)

**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAP8D3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD3, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 165136.		
B. SIOH	$ 9063.		
C. DESIGN COST	$ 9909.		
D. TOTAL COST (1A+1B+1C)	$ 184128.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 184128.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	101.	$ 3170.	12.43	$ 39407.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	13.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4230.	11.85	$ 50125.
N. TOTAL		101.	$ 7401.		$ 89532.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 4699.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 55680.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 101543.	0	1.00	101543.
d. TOTAL	$ 101543.			101543.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 157226.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 18869.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.76 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 246764.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.34
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LOCID 1.060
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD3, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	175667.
B. SIOH	$	9662.
C. DESIGN COST	$	10540.
D. TOTAL COST (1A+1B+1C)	$	195869.
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.
F. PUBLIC UTILITY COMPANY REBATE	$	0.
G. TOTAL INVESTMENT (1D - 1E - 1F)	$	195869.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	102.	$ 3177.	12.43	$ 39490.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	13.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	13.36	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4240.	11.85	$ 50244.
N. TOTAL		102.	$ 7417.		$ 89734.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 8851.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 104884.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 101543.	0	1.00	101543.
d. TOTAL	$ 101543.			101543.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 206427.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 23037.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.50 YEAR

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 296156.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.51
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAP8D3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD3, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	175866.	
B. SIOH	$	9673.	
C. DESIGN COST	$	10552.	
D. TOTAL COST (1A+1B+1C)	$	196091.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 196091.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	133.	$ 4161.	12.43	$ 51716
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	13.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.04	$ 0.
M. DEMAND SAVINGS			$ 5552.	11.85	$ 65788.
N. TOTAL		133.	$ 9712.		$ 117504.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 9029.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 106994.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 101543.	0	1.00	101543.
d. TOTAL	$ 101543.			101543.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 208537.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 25511.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.69 YEAR

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 326039.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.66
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY BASE: MAP810

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 90243-20 ECIP ENERGY STUDY

FISCAL YEAR 1994 DISCRETE PORTION NAME: BD10, ALT 2

ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 204410.	
B. SIOH	$ 11243.	
C. DESIGN COST	$ 12265.	
D. TOTAL COST (1A+1B+1C)	$ 227918.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 227918.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	163.	$ 5082.	12.43	$ 63167.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.36	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 6780.	11.85	$ 80347.
N. TOTAL		163.	$ 11862.		$ 143513.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 7038.

(1) DISCOUNT FACTOR (TABLE A) 11.85

(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 83400.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 140925.	0	1.00	140925.
d. TOTAL	$ 140925.			140925.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 224325.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 28295.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.06 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 367838.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.61

(IF < 1 PROJECT DOES NOT QUALIFY)

**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPG310
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD10, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 217635.		
B. SIOH	$ 11970.		
C. DESIGN COST	$ 13058.		
D. TOTAL COST (1A+1B+1C)	$ 242663.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 242663.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	159.	$ 4979.	12.43	$ 61886.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	13.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	13.36	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 6643.	11.85	$ 78720.
N. TOTAL		159.	$ 11622.		$ 140606.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 12441.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 147426.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 140925.	0	1.00	140925.
d. TOTAL	$ 140925.			140925.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 288351.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 33458.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.25 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 428959.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.77
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBD10
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD10, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 192091.		
B. SIOH	$ 10565.		
C. DESIGN COST	$ 11526.		
D. TOTAL COST (1A+1B+1C)	$ 214182.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 214182.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	142.	$ 4438.	12.43	$ 55161.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.88	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 5921.	11.85	$ 70184.
N. TOTAL		142.	$ 10359.		$ 125345.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 6780.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 80343.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 140925.	0	1.00	140925.
d. TOTAL	$ 140925.			140925.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 221268.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 26534.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.07 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 346593.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.62
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAP8D10
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD10, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 206230.		
B. SIOH	$ 11343.		
C. DESIGN COST	$ 12374.		
D. TOTAL COST (1A+1B+1C)	$ 229947.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 229947.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	135.	$ 4215.	12.43	$ 52397.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 5784.	11.85	$ 68536.
N. TOTAL		135.	$ 9999.		$ 120933.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 12183.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 144369.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 140925.	0	1.00	140925.
d. TOTAL	$ 140925.			140925.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 265294.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 31577.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.28 YEAR

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 406227.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.77
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAR93.0

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY

FISCAL YEAR 1994 DISCRETE PORTION NAME: BD10, ALT 6

ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 214952.	
B. SIOH	$ 11823.	
C. DESIGN COST	$ 12898.	
D. TOTAL COST (1A+1B+1C)	$ 239673.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 239673.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	180.	$ 5609.	12.43	$ 69717.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 7484.	11.85	$ 88681.
N. TOTAL		180.	$ 13092.		$ 158397.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 12353.

(1) DISCOUNT FACTOR (TABLE A) 11.85

(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 146383.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 140925.	0	1.00	140925.
d. TOTAL	$ 140925.			140925.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 287308.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 34840.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.88 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 445705.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.86

(IF < 1 PROJECT DOES NOT QUALIFY)

**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAP9320

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LOCID 1.000

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY

FISCAL YEAR 1994 DISCRETE PORTION NAME: BD16, ALT 2

ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	23132.	
B. SIOH	$	1273.	
C. DESIGN COST	$	1388.	
D. TOTAL COST (1A+1B+1C)	$	25793.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 25793.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	20.	$ 629.	12.43	$ 7814.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	13.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 809.	11.85	$ 9587.
N. TOTAL		20.	$ 1467.		$ 17401.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 594.

(1) DISCOUNT FACTOR (TABLE A) 11.85

(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 7039.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 16973.	0	1.00	16973.
d. TOTAL	$ 16973.			16973.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 24012.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 3193.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.08 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 41763.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.62

(IF < 1 PROJECT DOES NOT QUALIFY)

**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LOCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD16, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	25816.
B. SIOH	$	1420.
C. DESIGN COST	$	1549.
D. TOTAL COST (1A+1B+1C)	$	28785.
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.
F. PUBLIC UTILITY COMPANY REBATE	$	0.
G. TOTAL INVESTMENT (1D - 1E - 1F)	$	28785.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	20.	$ 618.	12.43	$ 7685.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 825.	11.85	$ 9776.
N. TOTAL		20.	$ 1443.		$ 17461.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 1634.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 19363.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 16973.	0	1.00	16973.
d. TOTAL	$ 16973.			16973.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 36336.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 4209.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.84 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 53797.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.87
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBD16
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD16, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	23132.	
B. SIOH	$	1273.	
C. DESIGN COST	$	1388.	
D. TOTAL COST (1A+1B+1C)	$	25793.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 25793.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	20.	$ 629.	12.43	$ 7814.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 839.	11.85	$ 9937.
N. TOTAL		20.	$ 1467.		$ 17751.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 594.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 7039.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 16973.	0	1.00	16973.
d. TOTAL	$ 16973.			16973.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 24012.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 3193.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.08 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 41763.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.62
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBD16
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID: 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD16, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 25816.		
B. SIOH	$ 1420.		
C. DESIGN COST	$ 1549.		
D. TOTAL COST (1A+1B+1C)	$ 28785.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 28785.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	20.	$ 618.	12.43	$ 7685.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	13.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	13.36	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 825.	11.85	$ 9776.
N. TOTAL		20.	$ 1443.		$ 17461.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 1634.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 19363.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 16973.	0	1.00	16973.
d. TOTAL	$ 16973.			16973.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 36336.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 4209.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.84 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 53797.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.87
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBD16
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.060
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD16, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	25339.	
B. SIOH	$	1394.	
C. DESIGN COST	$	1521.	
D. TOTAL COST (1A+1B+1C)	$	28254.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 28254.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	23.	$ 730.	12.43	$ 9075.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 974.	11.85	$ 11548.
N. TOTAL		23.	$ 1704.		$ 20623.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 1618.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 19173.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 16973.	0	1.00	16973.
d. TOTAL	$ 16973.			16973.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 36146.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 4454.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.34 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 56762.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 2.01
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBD41
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD41, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 75304.		
B. SIOH	$ 4142.		
C. DESIGN COST	$ 4519.		
D. TOTAL COST (1A+1B+1C)	$ 83965.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 83965.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	66.	$ 2053.	12.43	$ 25519.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2648.	11.85	$ 31376.
N. TOTAL		66.	$ 4701.		$ 56895.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 2172.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 25738.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 55945.	0	1.00	55945.
d. TOTAL	$ 55945.			55945.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)	$ 81683.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))	$ 10602.
5. SIMPLE PAYBACK PERIOD (1G/4)	7.92 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)	$ 138578.
7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)=	1.65

(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBD41
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD41, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	83982.	
B. SIOH	$	4619.	
C. DESIGN COST	$	5039.	
D. TOTAL COST (1A+1B+1C)	$	93640.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 93640.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	67.	$ 2107.	12.43	$ 26185.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2507.	11.85	$ 29713.
N. TOTAL		67.	$ 4614.		$ 55898.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 5523.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 65448.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 55945.	0	1.00	55945.
d. TOTAL	$ 55945.			55945.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 121393.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 13867.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.75 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 177290.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.89
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBD41
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD41, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 74415.	
B. SIOH	$ 4093.	
C. DESIGN COST	$ 4465.	
D. TOTAL COST (1A+1B+1C)	$ 82973.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 82973.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	68.	$ 2120.	12.43	$ 26349.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2641.	11.85	$ 31290.
N. TOTAL		68.	$ 4760.		$ 57639.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 2169.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 25703.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 55945.	0	1.00	55945.
d. TOTAL	$ 55945.			55945.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 81648.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 10659.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.78 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 139286.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.68
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBD41
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD41, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 83348.		
B. SIOH	$ 4585.		
C. DESIGN COST	$ 5001.		
D. TOTAL COST (1A+1B+1C)	$ 92934.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	92934.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	64.	$ 2014.	12.43	$ 25040.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2500.	11.85	$ 29626.
N. TOTAL		64.	$ 4515.		$ 54666.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 5521.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 65424.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 55945.	0	1.00	55945.
d. TOTAL	$ 55945.			55945.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 121369.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 13765.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.75 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 176035.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.89
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBD41
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BD41, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 82143.	
B. SIOH	$ 4518.	
C. DESIGN COST	$ 4929.	
D. TOTAL COST (1A+1B+1C)	$ 91590.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 91590.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	79.	$ 2472.	12.43	$ 30723.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 3084.	11.85	$ 36542.
N. TOTAL		79.	$ 5555.		$ 67265.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 5463.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 64737.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 55945.	0	1.00	55945.
d. TOTAL	$ 55945.			55945.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 120682.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 14748.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.21 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 187947.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 2.05
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBH81
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH81, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 46764.		
B. SIOH	$ 2572.		
C. DESIGN COST	$ 2806.		
D. TOTAL COST (1A+1B+1C)	$ 52142.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 52142.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	34.	$ 1076.	12.43	$ 13370.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1389.	11.85	$ 16458.
N. TOTAL		34.	$ 2465.		$ 29829.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 832.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 9859.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 24547.	0	1.00	24547.
d. TOTAL	$ 24547.			24547.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 34406.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 4933.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.57 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 64235.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.23
(IF < 1 PROJECT DOES NOT QUALIFY)
** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBH81
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH81, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 51176.	
B. SIOH	$ 2815.	
C. DESIGN COST	$ 3071.	
D. TOTAL COST (1A+1B+1C)	$ 57062.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 57062.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	35.	$ 1087.	12.43	$ 13509.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1405.	11.85	$ 16643.
N. TOTAL		35.	$ 2491.		$ 30152.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 2586.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 30644.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 24547.	0	1.00	24547.
d. TOTAL	$ 24547.			24547.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 55191.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 6714.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.50 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 85343.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.50
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBH81
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH81, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 39780.		
B. SIOH	$ 2188.		
C. DESIGN COST	$ 2387.		
D. TOTAL COST (1A+1B+1C)	$ 44355.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 44355.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	32.	$ 989.	12.43	$ 12291.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1319.	11.85	$ 15633.
N. TOTAL		32.	$ 2308.		$ 27923.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 811.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 9610.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 24547.	0	1.00	24547.
d. TOTAL	$ 24547.			24547.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 34157.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 4755.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.33 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 62081.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.40
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBH81
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH81, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 44192.		
B. SIOH	$ 2431.		
C. DESIGN COST	$ 2652.		
D. TOTAL COST (1A+1B+1C)	$ 49275.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	49275.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	32.	$ 1001.	12.43	$ 12437.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1335.	11.85	$ 15817.
N. TOTAL		32.	$ 2335.		$ 28255.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 2565.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 30395.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 24547.	0	1.00	24547.
d. TOTAL	$ 24547.			24547.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 54942.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 6537.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.54 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 83197.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.69
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBH81
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH81, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 50495.	
B. SIOH	$ 2778.	
C. DESIGN COST	$ 3030.	
D. TOTAL COST (1A+1B+1C)	$ 56303.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 56303.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	39.	$ 1222.	12.43	$ 15190.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1618.	11.85	$ 19171.
N. TOTAL		39.	$ 2840.		$ 34361.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 2563.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 30372.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 24547.	0	1.00	24547.
d. TOTAL	$ 24547.			24547.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 54919.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 7039.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.00 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 89280.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.59
(IF < 1 PROJECT DOES NOT QUALIFY)
** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBH111
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH111, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 38357.		
B. SIOH	$ 2110.		
C. DESIGN COST	$ 2302.		
D. TOTAL COST (1A+1B+1C)	$ 42769.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 42769.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	24.	$ 747.	12.43	$ 9282.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 960.	11.85	$ 11380.
N. TOTAL		24.	$ 1707.		$ 20661.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 336.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 3982.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 13597.	0	1.00	13597.
d. TOTAL	$ 13597.			13597.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 17579.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 2949.

5. SIMPLE PAYBACK PERIOD (1G/4) 14.50 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 38240.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= .89
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBH111
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH111, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 41842.		
B. SIOH	$ 2302.		
C. DESIGN COST	$ 2511.		
D. TOTAL COST (1A+1B+1C)	$ 46655.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 46655.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	25.	$ 767.	12.43	$ 9533.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 991.	11.85	$ 11737.
N. TOTAL		25.	$ 1757.		$ 21270.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 1742.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 20643.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 13597.	0	1.00	13597.
d. TOTAL	$ 13597.			13597.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 34240.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 4406.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.59 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 55510.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.19
(IF < 1 PROJECT DOES NOT QUALIFY)
** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBH111
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH111, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 32020.		
B. SIOH	$ 1761.		
C. DESIGN COST	$ 1922.		
D. TOTAL COST (1A+1B+1C)	$ 35703.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	35703.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	21.	$ 665.	12.43	$ 8264.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 888.	11.85	$ 10517.
N. TOTAL		21.	$ 1552.		$ 18781.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 314.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 3721.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 13597.	0	1.00	13597.
d. TOTAL	$ 13597.			13597.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 17318.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 2773.

5. SIMPLE PAYBACK PERIOD (1G/4) 12.88 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 36099.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.01
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBH111
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH111, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 35506.		
B. SIOH	$ 1953.		
C. DESIGN COST	$ 2131.		
D. TOTAL COST (1A+1B+1C)	$ 39590.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 39590.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	22.	$ 688.	12.43	$ 8547.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 918.	11.85	$ 10874.
N. TOTAL		22.	$ 1605.		$ 19420.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 1720.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 20382.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 13597.	0	1.00	13597.
d. TOTAL	$ 13597.			13597.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 33979.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 4232.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.36 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 53399.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.35
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBH111
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH111, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 41352.	
B. SIOH	$ 2275.	
C. DESIGN COST	$ 2482.	
D. TOTAL COST (1A+1B+1C)	$ 46109.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 46109.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	28.	$ 864.	12.43	$ 10743.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1143.	11.85	$ 13549.
N. TOTAL		28.	$ 2008.		$ 24292.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 1725.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 20441.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 16597.	0	1.00	16597.
d. TOTAL	$ 16597.			16597.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 37038.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 4839.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.53 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 61330.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.33
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBH115
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH115, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 73751.		
B. SIOH	$ 4057.		
C. DESIGN COST	$ 4425.		
D. TOTAL COST (1A+1B+1C)	$ 82233.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	82233.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	56.	$ 1742.	12.43	$ 21653.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2324.	11.85	$ 27543.
N. TOTAL		56.	$ 4066.		$ 49196.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 1483.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 17574.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 41700.	0	1.00	41700.
d. TOTAL	$ 41700.			41700.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 59274.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 8329.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.87 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 108469.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.32
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBH115
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH115, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 81283.	
B. SIOH	$ 4471.	
C. DESIGN COST	$ 4877.	
D. TOTAL COST (1A+1B+1C)	$ 90631.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 90631.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	56.	$ 1744.	12.43	$ 21682.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2327.	11.85	$ 27580.
N. TOTAL		56.	$ 4072.		$ 49262.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 4449.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 52721.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 41700.	0	1.00	41700.
d. TOTAL	$ 41700.			41700.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 94421.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 11301.

5. SIMPLE PAYBACK PERIOD (1G/4) — 8.02 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 143682.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= — 1.59
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): — N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBH115
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH115, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 66732.		
B. SIOH	$ 3671.		
C. DESIGN COST	$ 4004.		
D. TOTAL COST (1A+1B+1C)	$ 74407.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 74407.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	55.	$ 1709.	12.43	$ 21245.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2281.	11.85	$ 27025.
N. TOTAL		55.	$ 3990.		$ 48271.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 1471.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 17431.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 41700.	0	1.00	41700.
d. TOTAL	$ 41700.			41700.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 59131.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 8241.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.03 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 107402.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.44
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)
STUDY: MAPBH115
LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH115, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 74264.	
B. SIOH	$ 4085.	
C. DESIGN COST	$ 4456.	
D. TOTAL COST (1A+1B+1C)	$ 82805.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 82805.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	55.	$ 1712.	12.43	$ 21275.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2284.	11.85	$ 27062.
N. TOTAL		55.	$ 3995.		$ 48336.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 4436.
$ 52567.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 41700.	0	1.00	41700.
d. TOTAL	$ 41700.			41700.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 94267.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 11211.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.39 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 142603.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.72
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBH115
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BH115, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 80057.		
B. SIOH	$ 4404.		
C. DESIGN COST	$ 4804.		
D. TOTAL COST (1A+1B+1C)	$ 89265.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	89265.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	65.	$ 2032.	12.43	$ 25258.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2711.	11.85	$ 32129.
N. TOTAL		65.	$ 4743.		$ 57387.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 4409.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 52247.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 41700.	0	1.00	41700.
d. TOTAL	$ 41700.			41700.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 93947.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 11932.

5. SIMPLE PAYBACK PERIOD (1G/4) — 7.48 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 151334.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= — 1.70
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): — N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB01
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 9324320 ECIP ENERGY STUDY
FISCAL YEAR 94 DISCRETE PORTION NAME: B01, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 27228.	
B. SIOH	$ 1498.	
C. DESIGN COST	$ 1634.	
D. TOTAL COST (1A+1B+1C)	$ 30360.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 30360.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	15.	$ 481.	12.43	$ 5983.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 643.	11.85	$ 7620.
N. TOTAL		15.	$ 1124.		$ 13603.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 3685.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 11129.	0	1.00	11129.
d. TOTAL	$ 11129.			11129.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 14814.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 2177.

5. SIMPLE PAYBACK PERIOD (1G/4) 13.94 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 28417.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= .94
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB01

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 9324320 ECIP ENERGY STUDY

FISCAL YEAR 94 DISCRETE PORTION NAME: B01, ALT 3

ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 29302.		
B. SIOH	$ 1612.		
C. DESIGN COST	$ 1759.		
D. TOTAL COST (1A+1B+1C)	$ 32673.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	32673.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	15.	$ 481.	12.43	$ 5981.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 642.	11.85	$ 7607.
N. TOTAL		15.	$ 1123.		$ 13588.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 1127.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 13355.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 11129.	0	1.00	11129.
d. TOTAL	$ 11129.			11129.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)	$	24484.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))	$	2992.
5. SIMPLE PAYBACK PERIOD (1G/4)		10.92 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)	$	38072.
7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)=		1.17

(IF < 1 PROJECT DOES NOT QUALIFY)

*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB01
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 9324320 ECIP ENERGY STUDY
FISCAL YEAR 94 DISCRETE PORTION NAME: B01, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 18962.		
B. SIOH	$ 1043.		
C. DESIGN COST	$ 1138.		
D. TOTAL COST (1A+1B+1C)	$ 21143.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 21143.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	14.	$ 426.	12.43	$ 5295.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 569.	11.85	$ 6744.
N. TOTAL		14.	$ 995.		$ 12039.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 3425.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 11129.	0	1.00	11129.
d. TOTAL	$ 11129.			11129.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 14554.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 2026.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.44 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 26593.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.26
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 9324320 ECIP ENERGY STUDY
FISCAL YEAR 94 DISCRETE PORTION NAME: BO1, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

STUDY: MAPBO1
LCCID 1.080

1. INVESTMENT

A. CONSTRUCTION COST	$ 21037.		
B. SIOH	$ 1157.		
C. DESIGN COST	$ 1263.		
D. TOTAL COST (1A+1B+1C)	$ 23457.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 23457.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	14.	$ 426.	12.43	$ 5293.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 568.	11.85	$ 6732.
N. TOTAL		14.	$ 994.		$ 12025.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 13094.

$ 1105.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 11129.	0	1.00	11129.
d. TOTAL	$ 11129.			11129.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 24223.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 2841.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.26 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 36248.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.55
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB01
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 9324320 ECIP ENERGY STUDY
FISCAL YEAR 94 DISCRETE PORTION NAME: B01, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 28962.	
B. SIOH	$ 1593.	
C. DESIGN COST	$ 1738.	
D. TOTAL COST (1A+1B+1C)	$ 32293.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 32293.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	18.	$ 561.	12.43	$ 6974.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 749.	11.85	$ 8877.
N. TOTAL		18.	$ 1310.		$ 15851.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 1116.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 13225.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 11129.	0	1.00	11129.
d. TOTAL	$ 11129.			11129.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 24354.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 3168.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.19 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 40205.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.25
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB03
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: B03, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 28120.		
B. SIOH	$ 1547.		
C. DESIGN COST	$ 1688.		
D. TOTAL COST (1A+1B+1C)	$ 31355.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	31355.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	15.	$ 482.	12.43	$ 5996.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 644.	11.85	$ 7631.
N. TOTAL		15.	$ 1126.		$ 13627.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 98.
(1) DISCOUNT FACTOR (TABLE A)	11.85		
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 1161.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 7917.	0	1.00	7917.
d. TOTAL	$ 7917.			7917.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 9078.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 1752.

5. SIMPLE PAYBACK PERIOD (1G/4) 17.90 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 22705.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= .72
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB03
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: B03, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 30851.		
B. SIOH	$ 1697.		
C. DESIGN COST	$ 1851.		
D. TOTAL COST (1A+1B+1C)	$ 34399.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 34399.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	17.	$ 520.	12.43	$ 6464.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 694.	11.85	$ 8223.
N. TOTAL		17.	$ 1214.		$ 14687.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 1229.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 14564.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 7917.	0	1.00	7917.
d. TOTAL	$ 7917.			7917.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 22481.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 2971.

5. SIMPLE PAYBACK PERIOD (1G/4) 11.58 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 37167.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.08
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB03
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: B03, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 25558.		
B. SIOH	$ 1406.		
C. DESIGN COST	$ 1534.		
D. TOTAL COST (1A+1B+1C)	$ 28498.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 28498.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	15.	$ 476.	12.43	$ 5918.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 636.	11.85	$ 7533.
N. TOTAL		15.	$ 1112.		$ 13451.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 95.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 1126.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 7917.	0	1.00	7917.
d. TOTAL	$ 7917.			7917.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 9043.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 1735.

5. SIMPLE PAYBACK PERIOD (1G/4) 16.43 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 22494.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= .79
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPB03
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: B03, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 28288.	
B. SIOH	$ 1556.	
C. DESIGN COST	$ 1698.	
D. TOTAL COST (1A+1B+1C)	$ 31542.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 31542.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	16.	$ 514.	12.43	$ 6386.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 686.	11.85	$ 8124.
N. TOTAL		16.	$ 1199.		$ 14511.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 1227.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 14540.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 7917.	0	1.00	7917.
d. TOTAL	$ 7917.			7917.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 22457.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 2954.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.68 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 36968.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.17
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB03
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: B03, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 30538.		
B. SIOH	$ 1680.		
C. DESIGN COST	$ 1833.		
D. TOTAL COST (1A+1B+1C)	$ 34051.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	34051.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	19.	$ 594.	12.43	$ 7378.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 792.	11.85	$ 9382.
N. TOTAL		19.	$ 1385.		$ 16760.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 1219.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 14445.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 7917.	0	1.00	7917.
d. TOTAL	$ 7917.			7917.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 22362.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 3132.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.87 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 39122.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.15
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB04
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: B04, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 41725.	
B. SIOH	$ 2295.	
C. DESIGN COST	$ 2504.	
D. TOTAL COST (1A+1B+1C)	$ 46524.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 46524.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	25.	$ 768.	12.43	$ 9540.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1025.	11.85	$ 12144.
N. TOTAL		25.	$ 1792.		$ 21684.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 516.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 6115.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 17093.	0	1.00	17093.
d. TOTAL	$ 17093.			17093.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 23208.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 3448.

5. SIMPLE PAYBACK PERIOD (1G/4) 13.49 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 44892.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= .96
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB04
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: B04, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 45232.		
B. SIOH	$ 2488.		
C. DESIGN COST	$ 2714.		
D. TOTAL COST (1A+1B+1C)	$ 50434.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	50434.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	23.	$ 726.	12.43	$ 9026.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 970.	11.85	$ 11491.
N. TOTAL		23.	$ 1696.		$ 20517.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 1832.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 21709.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 17093.	0	1.00	17093.
d. TOTAL	$ 17093.			17093.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 38802.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 4667.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.81 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 59319.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.18
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPB04
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: B04, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 30277.	
B. SIOH	$ 1666.	
C. DESIGN COST	$ 1817.	
D. TOTAL COST (1A+1B+1C)	$ 33760.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 33760.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	22.	$ 693.	12.43	$ 8610.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 925.	11.85	$ 10960.
N. TOTAL		22.	$ 1618.		$ 19570.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 487.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 5771.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 17093.	0	1.00	17093.
d. TOTAL	$ 17093.			17093.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 22864.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 3244.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.41 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 42434.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.26
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPB04
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: B04, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 33784.		
B. SIOH	$ 1859.		
C. DESIGN COST	$ 2027.		
D. TOTAL COST (1A+1B+1C)	$ 37670.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	37670.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	21.	$ 651.	12.43	$ 8096.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 870.	11.85	$ 10307.
N. TOTAL		21.	$ 1521.		$ 18403.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 1803.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 21366.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 17093.	0	1.00	17093.
d. TOTAL	$ 17093.			17093.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 38459.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 4464.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.44 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 56862.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.51
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPB04
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: B04, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 44510.	
B. SIOH	$ 2448.	
C. DESIGN COST	$ 2671.	
D. TOTAL COST (1A+1B+1C)	$ 49629.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 49629.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	29.	$ 896.	12.43	$ 11133.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1195.	11.85	$ 14165.
N. TOTAL		29.	$ 2091.		$ 25298.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 1809.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 21437.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 17093.	0	1.00	17093.
d. TOTAL	$ 17093.			17093.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 38530.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 5040.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.85 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 63828.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.29
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX8
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX8, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 78751.		
B. SIOH	$ 4332.		
C. DESIGN COST	$ 4725.		
D. TOTAL COST (1A+1B+1C)	$ 87808.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	87808.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	49.	$ 1530.	12.43	$ 19018.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2041.	11.85	$ 24189.
N. TOTAL		49.	$ 3571.		$ 43208.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 1321.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 15654.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 40014.	0	1.00	40014.
d. TOTAL	$ 40014.			40014.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 55668.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 7560.

5. SIMPLE PAYBACK PERIOD (1G/4) — 11.61 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 98876.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.13
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX8
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX8, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 84545.		
B. SIOH	$ 4650.		
C. DESIGN COST	$ 5073.		
D. TOTAL COST (1A+1B+1C)	$ 94268.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	94268.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	49.	$ 1521.	12.43	$ 18903.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2029.	11.85	$ 24041.
N. TOTAL		49.	$ 3550.		$ 42944.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 3744.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 44366.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 40014.	0	1.00	40014.
d. TOTAL	$ 40014.			40014.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 84380.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 9961.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.46 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 127324.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.35
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAP8X8
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX8, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 70060.	
B. SIOH	$ 3854.	
C. DESIGN COST	$ 4204.	
D. TOTAL COST (1A+1B+1C)	$ 78118.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 78118.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	44.	$ 1366.	12.43	$ 16983.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1823.	11.85	$ 21600.
N. TOTAL		44.	$ 3189.		$ 38583.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 1255.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 14872.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 40014.	0	1.00	40014.
d. TOTAL	$ 40014.			40014.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 54886.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 7112.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.98 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 93469.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.20
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX8
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX8, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 76259.		
B. SIOH	$ 4195.		
C. DESIGN COST	$ 4576.		
D. TOTAL COST (1A+1B+1C)	$ 85030.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 85030.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	43.	$ 1357.	12.43	$ 16868.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1810.	11.85	$ 21452.
N. TOTAL		43.	$ 3167.		$ 38320.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 3679.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 43596.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 40014.	0	1.00	40014.
d. TOTAL	$ 40014.			40014.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 83610.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 9514.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.94 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 121930.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.43
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX8
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX8, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 83497.	
B. SIOH	$ 4593.	
C. DESIGN COST	$ 5010.	
D. TOTAL COST (1A+1B+1C)	$ 93100.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 93100.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	57.	$ 1767.	12.43	$ 21963.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 2358.	11.85	$ 27936.
N. TOTAL		57.	$ 4124.		$ 49899.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 3710.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 43964.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 40014.	0	1.00	40014.
d. TOTAL	$ 40014.			40014.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 83978.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 10502.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.86 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 133876.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.44
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX14
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX14, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 177096.	
B. SIOH	$ 9741.	
C. DESIGN COST	$ 10626.	
D. TOTAL COST (1A+1B+1C)	$ 197463.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 197463.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	126.	$ 3939.	12.43	$ 48964.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 5267.	11.85	$ 62408.
N. TOTAL		126.	$ 9206.		$ 111372.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 4630.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 54866.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 102007.	0	1.00	102007.
d. TOTAL	$ 102007.			102007.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 156873.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 20636.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.57 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 268245.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.36
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBX14
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX14, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 188711.		
B. SIOH	$ 10380.		
C. DESIGN COST	$ 11323.		
D. TOTAL COST (1A+1B+1C)	$ 210414.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 210414.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	126.	$ 3942.	12.43	$ 48999.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 5270.	11.85	$ 62445.
N. TOTAL		126.	$ 9212.		$ 111444.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 9203.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 109056.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 102007.	0	1.00	102007.
d. TOTAL	$ 102007.			102007.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 211063.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 25215.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.34 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 322507.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.53
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX14
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX14, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 166958.		
B. SIOH	$ 9183.		
C. DESIGN COST	$ 10018.		
D. TOTAL COST (1A+1B+1C)	$ 186159.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 186159.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	107.	$ 3350.	12.43	$ 41637.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4480.	11.85	$ 53088.
N. TOTAL		107.	$ 7830.		$ 94725.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 4394.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 52069.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 102007.	0	1.00	102007.
d. TOTAL	$ 102007.			102007.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 154076.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 19024.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.79 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 248801.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.34
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX14
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX14, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 178573.		
B. SIOH	$ 9822.		
C. DESIGN COST	$ 10715.		
D. TOTAL COST (1A+1B+1C)	$ 199110.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	199110.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	107.	$ 3353.	12.43	$ 41672.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4483.	11.85	$ 53124.
N. TOTAL		107.	$ 7836.		$ 94796.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 8966.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 106247.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 102007.	0	1.00	102007.
d. TOTAL	$ 102007.			102007.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 208254.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 23602.

5. SIMPLE PAYBACK PERIOD (1G/4) — 8.44 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 303050.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.52
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBX14
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX14, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 186818.	
B. SIOH	$ 10275.	
C. DESIGN COST	$ 11209.	
D. TOTAL COST (1A+1B+1C)	$ 208302.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 208302.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	140.	$ 4386.	12.43	$ 54523.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 5863.	11.85	$ 69473.
N. TOTAL		140.	$ 10249.		$ 123996.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 9140.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 108309.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 102007.	0	1.00	102007.
d. TOTAL	$ 102007.			102007.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 210316.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 26190.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.95 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 334312.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.60
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX18
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX18, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 130783.	
B. SIOH	$ 7193.	
C. DESIGN COST	$ 7847.	
D. TOTAL COST (1A+1B+1C)	$ 145823.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 145823.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	96.	$ 3006.	12.43	$ 37367.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4011.	11.85	$ 47527.
N. TOTAL		96.	$ 7017.		$ 84893.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 2706.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 32066.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 69069.	0	1.00	69069.
d. TOTAL	$ 69069.			69069.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 101135.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 14327.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.18 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 186029.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.28
(IF < 1 PROJECT DOES NOT QUALIFY)
** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX18
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX18, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 143260.	
B. SIOH	$ 7880.	
C. DESIGN COST	$ 8596.	
D. TOTAL COST (1A+1B+1C)	$ 159736.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 159736.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	96.	$ 2984.	12.43	$ 37087.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 3981.	11.85	$ 47170.
N. TOTAL		96.	$ 6964.		$ 84257.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 7579.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 89811.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 69069.	0	1.00	69069.
d. TOTAL	$ 69069.			69069.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 158880.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 19148.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.34 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 243137.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.52
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX18
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX18, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 114210.		
B. SIOH	$ 6282.		
C. DESIGN COST	$ 6853.		
D. TOTAL COST (1A+1B+1C)	$ 127345.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	127345.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	92.	$ 2886.	12.43	$ 35874.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 3851.	11.85	$ 45628.
N. TOTAL		92.	$ 6737.		$ 81502.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 2658.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 31497.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 69069.	0	1.00	69069.
d. TOTAL	$ 69069.			69069.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 100566.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 13999.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.10 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 182069.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.43
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX18
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX18, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 126687.		
B. SIOH	$ 6968.		
C. DESIGN COST	$ 7602.		
D. TOTAL COST (1A+1B+1C)	$ 141257.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	141257.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	92.	$ 2864.	12.43	$ 35594.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 3820.	11.85	$ 45271.
N. TOTAL		92.	$ 6684.		$ 80865.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 7531.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 89242.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 69069.	0	1.00	69069.
d. TOTAL	$ 69069.			69069.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 158311.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 18819.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.51 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 239176.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.69
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX18
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX18, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 141135.	
B. SIOH	$ 7763.	
C. DESIGN COST	$ 8468.	
D. TOTAL COST (1A+1B+1C)	$ 157366.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 157366.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	111.	$ 3482.	12.43	$ 43286.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4646.	11.85	$ 55060.
N. TOTAL		111.	$ 8129.		$ 98346.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 7508.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 88970.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 69069.	0	1.00	69069.
d. TOTAL	$ 69069.			69069.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 158039.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 20241.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.77 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 256384.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.63
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX26
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX26, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 13250.		
B. SIOH	$ 729.		
C. DESIGN COST	$ 795.		
D. TOTAL COST (1A+1B+1C)	$ 14774.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 14774.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	10.	$ 323.	12.43	$ 4012.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 431.	11.85	$ 5104.
N. TOTAL		10.	$ 753.		$ 9115.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 329.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 3899.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 9901.	0	1.00	9901.
d. TOTAL	$ 9901.			9901.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)	$ 13800.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))	$ 1743.
5. SIMPLE PAYBACK PERIOD (1G/4)	8.48 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)	$ 22915.
7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)=	1.55

(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX26
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX26, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 14439.	
B. SIOH	$ 795.	
C. DESIGN COST	$ 867.	
D. TOTAL COST (1A+1B+1C)	$ 16101.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 16101.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	10.	$ 324.	12.43	$ 4026.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 433.	11.85	$ 5129.
N. TOTAL		10.	$ 757.		$ 9155.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 799.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 9468.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 9901.	0	1.00	9901.
d. TOTAL	$ 9901.			9901.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 19369.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 2216.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.27 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 28524.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.77
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBX26
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX26, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 10708.		
B. SIOH	$ 589.		
C. DESIGN COST	$ 643.		
D. TOTAL COST (1A+1B+1C)	$ 11940.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$	11940.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	10.	$ 305.	12.43	$ 3789.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 407.	11.85	$ 4821.
N. TOTAL		10.	$ 712.		$ 8609.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 322.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 3816.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 9901.	0	1.00	9901.
d. TOTAL	$ 9901.			9901.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 13717.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 1694.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.05 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 22326.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.87
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX26

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY

FISCAL YEAR 1994 DISCRETE PORTION NAME: BX26, ALT 5

ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 11897.	
B. SIOH	$ 655.	
C. DESIGN COST	$ 714.	
D. TOTAL COST (1A+1B+1C)	$ 13266.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 13266.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	10.	$ 306.	12.43	$ 3803.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 409.	11.85	$ 4845.
N. TOTAL		10.	$ 715.		$ 8649.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 792.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 9385.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 9901.	0	1.00	9901.
d. TOTAL	$ 9901.			9901.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 19286.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 2167.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.12 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 27935.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 2.11
(IF < 1 PROJECT DOES NOT QUALIFY)

*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBX26
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX26, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 14248.			
B. SIOH	$ 784.			
C. DESIGN COST	$ 855.			
D. TOTAL COST (1A+1B+1C)	$ 15887.			
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.			
F. PUBLIC UTILITY COMPANY REBATE	$ 0.			
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 15887.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	12.	$ 369.	12.43	$ 4582.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 492.	11.85	$ 5831.
N. TOTAL		12.	$ 861.		$ 10414.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 793.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 9397.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 9901.	0	1.00	9901.
d. TOTAL	$ 9901.			9901.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 19298.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 2314.

5. SIMPLE PAYBACK PERIOD (1G/4) 6.87 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 29712.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.87
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX27
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX27, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 63800.	
B. SIOH	$ 3509.	
C. DESIGN COST	$ 3828.	
D. TOTAL COST (1A+1B+1C)	$ 71137.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 71137.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	41.	$ 1294.	12.43	$ 16088.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1727.	11.85	$ 20466.
N. TOTAL		41.	$ 3021.		$ 36554.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 1650.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 19553.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 34266.	0	1.00	34266.
d. TOTAL	$ 34266.			34266.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 53819.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 6956.

5. SIMPLE PAYBACK PERIOD (1G/4) 10.23 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 90373.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.27
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX27

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080

INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY

FISCAL YEAR 1994 DISCRETE PORTION NAME: BX27, ALT 3

ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 66702.		
B. SIOH	$ 3669.		
C. DESIGN COST	$ 4003.		
D. TOTAL COST (1A+1B+1C)	$ 74374.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 74374.	

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	41.	$ 1288.	12.43	$ 16014.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1719.	11.85	$ 20367.
N. TOTAL		41.	$ 3007.		$ 36380.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 3159.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 37434.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 34266.	0	1.00	34266.
d. TOTAL	$ 34266.			34266.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 71700.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 8450.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.80 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 108080.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.45
(IF < 1 PROJECT DOES NOT QUALIFY)

**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX27
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX27, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 50762.		
B. SIOH	$ 2792.		
C. DESIGN COST	$ 3046.		
D. TOTAL COST (1A+1B+1C)	$ 56600.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 56600.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	35.	$ 1088.	12.43	$ 13530.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1452.	11.85	$ 17211.
N. TOTAL		35.	$ 2541.		$ 30741.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 1568.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 18581.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 34266.	0	1.00	34266.
d. TOTAL	$ 34266.			34266.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 52847.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 6393.

5. SIMPLE PAYBACK PERIOD (1G/4) — 8.85 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 83587.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.48
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX27
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX27, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 54621.		
B. SIOH	$ 3005.		
C. DESIGN COST	$ 3278.		
D. TOTAL COST (1A+1B+1C)	$ 60904.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT		$ 0.	
F. PUBLIC UTILITY COMPANY REBATE		$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 60904.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	35.	$ 1082.	12.43	$ 13455.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1444.	11.85	$ 17113.
N. TOTAL		35.	$ 2527.		$ 30567.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 3077.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 36462.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 34266.	0	1.00	34266.
d. TOTAL	$ 34266.			34266.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 70728.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 7888.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.72 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 101296.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.66
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX27
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX27, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 66049.		
B. SIOH	$ 3633.		
C. DESIGN COST	$ 3963.		
D. TOTAL COST (1A+1B+1C)	$ 73645.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 73645.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	46.	$ 1442.	12.43	$ 17921.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 1924.	11.85	$ 22796.
N. TOTAL		46.	$ 3365.		$ 40717.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 3137.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 37173.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 34266.	0	1.00	34266.
d. TOTAL	$ 34266.			34266.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 71439.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 8787.

5. SIMPLE PAYBACK PERIOD (1G/4) — 8.38 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 112156.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= — 1.52
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): — N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX41
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX41, ALT 2
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 149824.		
B. SIOH	$ 8241.		
C. DESIGN COST	$ 8990.		
D. TOTAL COST (1A+1B+1C)	$ 167055.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 167055.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	117.	$ 3660.	12.43	$ 45490.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4884.	11.85	$ 57871.
N. TOTAL		117.	$ 8543.		$ 103360.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)			$ 3943.
(1) DISCOUNT FACTOR (TABLE A)		11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)			$ 46725.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 95349.	0	1.00	95349.
d. TOTAL	$ 95349.			95349.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 142074.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 18843.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.87 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 245434.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.47
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX41
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX41, ALT 3
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 163735.	
B. SIOH	$ 9006.	
C. DESIGN COST	$ 9824.	
D. TOTAL COST (1A+1B+1C)	$ 182565.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 182565.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	114.	$ 3570.	12.43	$ 44371.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4763.	11.85	$ 56442.
N. TOTAL		114.	$ 8333.		$ 100813.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 9443.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 111900.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 95349.	0	1.00	95349.
d. TOTAL	$ 95349.			95349.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 207249.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 24132.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.57 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 308062.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.69
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MAPBX41
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX41, ALT 4
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 148187.	
B. SIOH	$ 8151.	
C. DESIGN COST	$ 8892.	
D. TOTAL COST (1A+1B+1C)	$ 165230.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 165230.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	112.	$ 3495.	12.43	$ 43443.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4664.	11.85	$ 55270.
N. TOTAL		112.	$ 8159.		$ 98713.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 3881.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 45990.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 95349.	0	1.00	95349.
d. TOTAL	$ 95349.			95349.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 141339.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 18397.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.98 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 240051.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.45
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX41
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX41, ALT 5
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$ 162523.	
B. SIOH	$ 8939.	
C. DESIGN COST	$ 9752.	
D. TOTAL COST (1A+1B+1C)	$ 181214.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 181214.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	109.	$ 3405.	12.43	$ 42324.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 4543.	11.85	$ 53839.
N. TOTAL		109.	$ 7948.		$ 96163.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) — $ 9381.
(1) DISCOUNT FACTOR (TABLE A) — 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) — $ 111165.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 95349.	0	1.00	95349.
d. TOTAL	$ 95349.			95349.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 206514.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 23686.

5. SIMPLE PAYBACK PERIOD (1G/4) — 7.65 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) — $ 302677.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.67
(IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPBX41
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 93243-20 ECIP ENERGY STUDY
FISCAL YEAR 1994 DISCRETE PORTION NAME: BX41, ALT 6
ANALYSIS DATE: 11-09-94 ECONOMIC LIFE 15 YEARS PREPARED BY: M. RICHARME

1. INVESTMENT

A. CONSTRUCTION COST	$	161065.
B. SIOH	$	8859.
C. DESIGN COST	$	9664.
D. TOTAL COST (1A+1B+1C)	$	179588.
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.
F. PUBLIC UTILITY COMPANY REBATE	$	0.
G. TOTAL INVESTMENT (1D - 1E - 1F)	$	179588.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	134.	$ 4196.	12.43	$ 52160.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 5599.	11.85	$ 66353.
N. TOTAL		134.	$ 9796.		$ 118513.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 9354.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 110845.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 95349.	0	1.00	95349.
d. TOTAL	$ 95349.			95349.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 206194.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 25506.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.04 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 324707.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.81
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPPACK
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 9324320 ECIP ENERGY STUDY
FISCAL YEAR 94 DISCRETE PORTION NAME: PACKAGE 1
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: K. ROESNER

1. INVESTMENT

A. CONSTRUCTION COST	$ 488621.	
B. SIOH	$ 26875.	
C. DESIGN COST	$ 29318.	
D. TOTAL COST (1A+1B+1C)	$ 544814.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 544814.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	366.	$ 11434.	12.43	$ 142123.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 15215.	11.85	$ 180298.
N. TOTAL		366.	$ 26649.		$ 322420.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 12849.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 152261.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 327073.	0	1.00	327073.
d. TOTAL	$ 327073.			327073.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 479334.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 61303.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.89 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 801754.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.47
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPPACK
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 9324320 ECIP ENERGY STUDY
FISCAL YEAR 94 DISCRETE PORTION NAME: PACKAGE 2
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: K. ROESNER

1. INVESTMENT

A. CONSTRUCTION COST	$ 281168.	
B. SIOH	$ 15465.	
C. DESIGN COST	$ 16870.	
D. TOTAL COST (1A+1B+1C)	$ 313503.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 313503.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	199.	$ 6217.	12.43	$ 77274.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 8331.	11.85	$ 98722.
N. TOTAL		199.	$ 14548.		$ 175997.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 7052.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 83566.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 171076.	0	1.00	171076.
d. TOTAL	$ 171076.			171076.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 254642.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 33005.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.50 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 430639.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.37
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPPACK
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 9324320 ECIP ENERGY STUDY
FISCAL YEAR 94 DISCRETE PORTION NAME: PACKAGE 3
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: K. ROESNER

1. INVESTMENT

A. CONSTRUCTION COST	$	357227.	
B. SIOH	$	19648.	
C. DESIGN COST	$	21434.	
D. TOTAL COST (1A+1B+1C)	$	398309.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$	0.	
F. PUBLIC UTILITY COMPANY REBATE	$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			$ 398309.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	243.	$ 7591.	12.43	$ 94360.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 10151.	11.85	$ 120289.
N. TOTAL		243.	$ 17742.		$ 214649.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 11479.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 136026.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 242468.	0	1.00	242468.
d. TOTAL	$ 242468.			242468.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 378494.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 45386.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.78 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 593144.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.49
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPPACK
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 9324320 ECIP ENERGY STUDY
FISCAL YEAR 94 DISCRETE PORTION NAME: PACKAGE 4
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: K. ROESNER

1. INVESTMENT

A. CONSTRUCTION COST	$ 273364.		
B. SIOH	$ 15035.		
C. DESIGN COST	$ 16402.		
D. TOTAL COST (1A+1B+1C)	$ 304801.		
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.		
F. PUBLIC UTILITY COMPANY REBATE	$ 0.		
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 304801.	

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	215.	$ 6717.	12.43	$ 83487.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 8757.	11.85	$ 103770.
N. TOTAL		215.	$ 15474.		$ 187258.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-) $ 7618.
(1) DISCOUNT FACTOR (TABLE A) 11.85
(2) DISCOUNTED SAVING/COST (3A X 3A1) $ 90273.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 185560.	0	1.00	185560.
d. TOTAL	$ 185560.			185560.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 275833.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 35462.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.60 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 463091.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.52
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY — STUDY: MAPPACK
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) — LCCID 1.080
INSTALLATION & LOCATION: MILAN ARMY AMMREGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 9324320 ECIP ENERGY STUDY
FISCAL YEAR 94 DISCRETE PORTION NAME: PACKAGE 5
ANALYSIS DATE: 11-10-94 ECONOMIC LIFE 15 YEARS PREPARED BY: K. ROESNER

1. INVESTMENT

A. CONSTRUCTION COST	$ 296053.	
B. SIOH	$ 16283.	
C. DESIGN COST	$ 17764.	
D. TOTAL COST (1A+1B+1C)	$ 330100.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	$ 0.	
F. PUBLIC UTILITY COMPANY REBATE	$ 0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)		$ 330100.

2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST $/ MWH(1)	SAVINGS MWH/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	$ 31.24	209.	$ 6529.	12.43	$ 81157.
B. DIST	$ .00	0.	$ 0.	13.56	$ 0.
C. RESID	$ .00	0.	$ 0.	15.09	$ 0.
D. NAT G	$ .00	0.	$ 0.	15.86	$ 0.
E. COAL	$ .00	0.	$ 0.	13.61	$ 0.
F. LPG	$ .00	0.	$ 0.	12.64	$ 0.
M. DEMAND SAVINGS			$ 8702.	11.85	$ 103119.
N. TOTAL		209.	$ 15231.		$ 184276.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)		$ 7814.
(1) DISCOUNT FACTOR (TABLE A)	11.85	
(2) DISCOUNTED SAVING/COST (3A X 3A1)		$ 92596.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-)(4)
1. BASELINE DIFF.	$ 185691.	0	1.00	185691.
d. TOTAL	$ 185691.			185691.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4) $ 278287.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE)) $ 35425.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.32 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) $ 462563.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.40
(IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

DD Form 1391

1. COMPONENT	FY 1995 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
ARMY		26 AUG. 94

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
MILAN ARMY AMMO PLANT MILAN, TENNESSEE	MILAN - LIMITED ENERGY STUDY

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
			$545K

9. COST ESTIMATES

ITEM	U/M	QUANTITY	UNIT COST	COST ($000)
PACKAGE 1				
BUILDING A-4 ALTERNATE 4	LS	1		$155K
BUILDING A-6 ALTERNATE 4	LS	1		$ 4K
BUILDING B-10 ALTERNATE 4	LS	1		$10K
BUILDING B-12 ALTERNATE 4	LS	1		$ 33K
BUILDING D-16 ALTERNATE 4	LS	1		$26K
BUILDING O-1 ALTERNATE 4	LS	1		$ 21K
BUILDING O-4 ALTERNATE 4	LS	1		$ 34K
BUILDING X-26 ALTERNATE 4	LS	1		$ 12K
BUILDING B-14 ALTERNATE 4	LS	1		$ 250K

10. DESCRIPTION OF PROPOSED CONSTRUCTION

ALTERNATE 4 PROPOSES REPLACING INCANDESCENT FIXTURES WITH 70W METAL HALIDE FIXTURES.

DD FORM 1 DEC 76 1391 PREVIOUS EDITIONS MAY BE USED INTERNALLY UNTIL EXHAUSTED. PAGE NO.

FOR OFFICIAL USE ONLY
(WHEN DATA IS ENTERED)

1. COMPONENT	FY 1995 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
ARMY		26 AUG. '94

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
MILAN ARMY AMMO PLANT MILAN, TENNESSEE	MILAN - LIMITED ENERGY STUDY

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
			$ 313 K

9. COST ESTIMATES

ITEM	U/M	QUANTITY	UNIT COST	COST ($000)
PACKAGE 2				
BUILDING X-14 ALTERNATE 4	LS	1		$ 186 K
BUILDING X-18 ALTERNATE 4	LS	1		$127 K

10. DESCRIPTION OF PROPOSED CONSTRUCTION

ALTERNATE 4 PROPOSES REPLACING EXISTING INCANDESCENT FIXTURES WITH 70W METAL HALIDE FIXTURES.

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1. COMPONENT	FY 1995 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
ARMY		26 AUG '94

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
MILAN ARMY AMMO PLANT MILAN, TENNESSEE	MILAN - LIMITED ENERGY STUDY

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
			$398K

9. COST ESTIMATES

ITEM	U/M	QUANTITY	UNIT COST	COST ($000)
PACKAGE 3				
BUILDING D-3 ALTERNATE 4	LS	1		$184K
BUILDING D-10 ALTERNATE 4	LS	1		$214K

10. DESCRIPTION OF PROPOSED CONSTRUCTION

ALTERNATE 4 PROPOSES REPLACING EXISTING INCANDESCENT FIXTURES WITH 70W METAL HALIDE FIXTURES.

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1. COMPONENT	FY 1995 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
ARMY		26 AUG. 94

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
MILAN ARMY AMMO PLANT MILAN, TENNESSEE	MILAN - LIMITED ENERGY STUDY

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
			$ 305 K

9. COST ESTIMATES

ITEM	U/M	QUANTITY	UNIT COST	COST ($000)
PACKAGE 4				
BUILDING D-41 ALTERNATE	LS	1		$ 83 K
BUILDING X-27 ALTERNATE 4	LS	1		$ 57K
BUILDING X-41 ALTERNATE 4	LS	1		$ 165K

10. DESCRIPTION OF PROPOSED CONSTRUCTION

ALTERNATE 4 PROPOSES REPLACING EXISTING INCANDESCENT FIXTURES WITH 70W METAL HALIDE FIXTURES.

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(WHEN DATA IS ENTERED)

1. COMPONENT	FY 1995 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
ARMY		26 AUG '94

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
MILAN ARMY AMMO PLANT MILAN, TENNESSEE	MILAN - LIMITED ENERGY STUDY

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
			$329 K

9. COST ESTIMATES

ITEM	U/M	QUANTITY	UNIT COST	COST ($000)
PACKAGE 5				
BUILDING B-14 ALTERNATE	LS	1		$211 K
BUILDING B-18 ALTERNATE 4	LS	1		$44 K
BUILDING H-115 ALTERNATE 4	LS	1		$74 K

10. DESCRIPTION OF PROPOSED CONSTRUCTION

ALTERNATE 4 PROPOSES REPLACING EXISTING INCANDESCENT FIXTURES WITH 70W METAL HALIDE FIXTURES.

DD FORM 1 DEC 76 1391 PREVIOUS EDITIONS MAY BE USED INTERNALLY UNTIL EXHAUSTED. PAGE NO.

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(WHEN DATA IS ENTERED)

Project Development Brochure (PDB)

installation: MILAN ARMY AMMUNITION PLANT

project: PACKAGES 1 THRU 5

project number
temporary: TP-1 THRU 5 program year FY'95

permanent: _____ category code _____

point of contact:

user
name BRAD McCREADY date _____
title SMCM-EN phone 901-686-6183
autovon _____

dfae
name _____ date _____
title _____ phone _____
autovon _____

engineer district
name TONY BATTAGLIA date _____
title CESAM-EN phone 205-690-2618
autovon _____

other (A-E)
name _____ date _____
title _____ phone _____
autovon _____

reviewed by:

installation facility engineer
name _____ date _____
title _____ phone _____
autovon _____

approved by:

macom engineer
name _____ date _____
title _____ phone _____
autovon _____

project development brochure, PDB-1

DA FORM 5020-R, Feb 82

facility

MILAN ARMY AMMUNITION PLANT

MILAN, TENNESSEE

project coordinator for using service

BRAD McCREADY

MAAP - ARMY

functional requirements summary, PDB-1

DA FORM 5020-1-R, Feb 82

IV-130

OBJECTIVE

THE OBJECTIVE FOR THE LISTED BUILDINGS IS TO IMPROVE EXISTING LIGHTING CONDITIONS AND UTILIZE THE BEST TECHNOLOGY POSSIBLE THAT WILL PROVIDE CL 2, DIV 1 & 2, GROUPS E, F, & G FIXTURES, YET PROVIDE A PAYBACK SUFFICIENT TO JUSTIFY LIGHTING CHANGE OUT VERSUS REPAIR AND UPGRADE OF EXISTING FACILITIES.

LIST OF WORK AREAS

B - BELT, AREA OF ASSEMBLY ALONG A CONVEYOR BELT.

C - BUILDING, AREA OF PASSAGE, STORAGE, ETC UNDER BUILDING ROOF. AREA INCORPORATES BELT.

R - RAMP, AREA OF GATHERING & TRANSPORTING FINAL PACKAGED PRODUCTS

functional requirements summary, PDB-1

LIST OF WORK AREAS, CFD

L- LOADING, AREA OF LOADING FINAL PRODUCTS ONTO TRANSPORTATION AWAY FROM FACILITY.

THE ABOVE AREAS ARE TYPICAL FOR ALL BUILDINGS AND REQUIRE DIFFERENT LEVELS OF LIGHTING.

SOLUTION

PROVIDE FLUORESCENT LIGHTING FOR "B" AREAS, AND HID LIGHTING FOR "C, R, & L" AREAS.

PACKAGES 1 THRU 5 GROUP VARIOUS BUILDINGS TOGETHER AND DETAIL HOW THE CHANGE-OUTS ARE TO OCCUR.

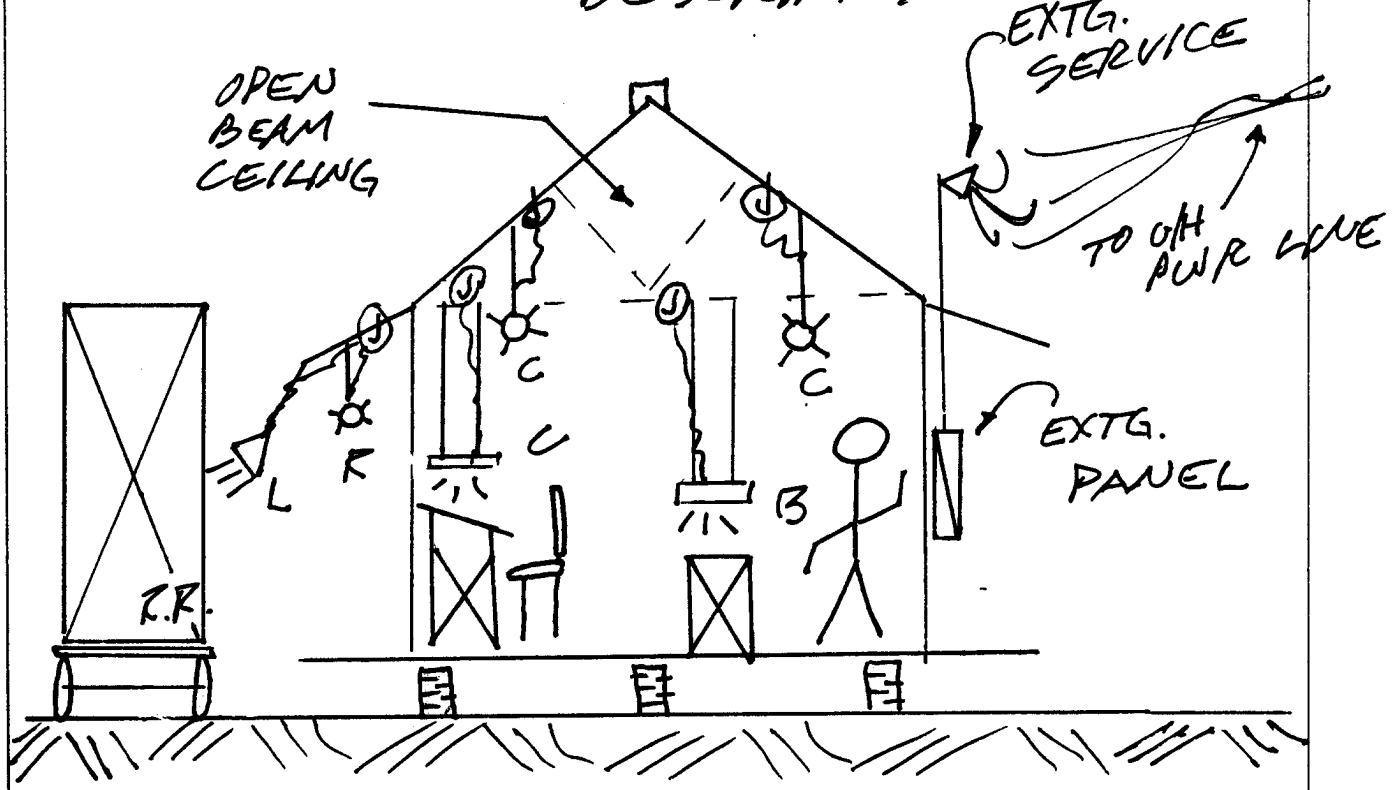
REMOVE FIXTURES PER "ALTERNATE" DESCRIPTION

PROVIDE EXTRA CONDUIT & WIRE AS NECESSARY TO RELOCATE FIXTURES NEARBY (WITHIN 10 FT.)

TYPICAL EXISTING BUILDING - ELECTRICAL JUNCTION BOXES EXISTING - REPLACE WITH FIXTURES AS INDICATED:

B FLUORESCENTS - NEW OR REUSE EXISTING

C, R, L HID'S - NEW AS PER PACKAGE ALTERNATE DESCRIPTIONS.



B = BELT LTG.
C = BLDG LTG.
R = RAMP LTG.
L = LOADING LTG.

(J) = JUNCTION BOX

facilities requirements sketch, PDB- ½

DA FORM 5022-R, Feb 82

A. SPECIAL CONSIDERATIONS

	ITEM	Required or Not Required	To Be * Determined	Comment Attached	Document Attached
A-1	Cost estimates for each primary and supporting facility	R	D		
A-2	Telecommunications system coordination with USACC and authorization for exceptions	NR			
A-3	Coordination with state and local governmental requirements (blind vendors, medical facilities, construction and operating permits, clearinghouse coordination, etc.)	NR			
A-4	Assignment of airspace	NR			
A-5	Economic analysis of alternatives	R	D		
A-6	Approval for new starts	NR			
A-7	International balance of payments (IBOP) coordination with U.S. European command and NATO—overseas cost estimates and comparables (include rate of exchange used in estimates)	NR			
A-8	Impact on historic places—on site survey by authorized archeologist and coordination with state historic preservation officer and advisory council on historic preservation	NR			
A-9	Exceptions to established criteria	R	A		
A-10	Coordination with various staff agencies (Provost Marshall-physical security, etc.)	R	A		
A-11	Identification of related or support projects (so projects can be coordinated)	NR			
A-12	Required completion date	R	A		
	Other Special Considerations (List and number items)				

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

TO BE DETERMINED – Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED – Significant information summarized or explained and attached.

DOCUMENT ATTACHED – Significant information is in an existing document which is attached.

*BY WHOM (Check and insert appropriate letter)

A – DFAE
B – Using Service
C – Construction Service
D – Designer
E – Other (Check Comments Attached and explain)

documentation checklist

DA FORM 5023-A-R, Feb 82

B. SITE DEVELOPMENT

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
B-1	Consultation with the District Office to determine and evaluate flood plain hazards	NR			
B-2	Preparation, submission, and/or approval of new				
(A)	General Site Plan	NR			
(B)	Annotated General Site Plan	NR			
(C)	Sketch Site Plan	NR			
(D)	Facilities Requirements Sketch	NR			
B-3	Preparation of				
(A)	Site Survey	NR			
(B)	Subsoil information	NR			
B-4	Approval by Department of Defense Explosive Safety Board (DDESB) for Safety Site Plan	NR			
	Other Site Development Considerations (List and number items)	NR			

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

TO BE DETERMINED – Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED – Significant information summarized or explained and attached.

DOCUMENT ATTACHED – Significant information is in an existing document which is attached.

*BY WHOM (Check and insert appropriate letter)

A – OFAE
B – Using Service
C – Construction Service
D – Designer
E – Other (Check Comments Attached and explain)

documentation checklist

DA FORM 5023-B-R, Feb 82

C. ARCHITECTURAL & STRUCTURAL

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
C-1	Reconciliation with troop housing programs and requirements	NR			
C-2	Evaluation of existing facilities (including degree of utilization)	R	D		
C-3	Approval for removal and relocation of existing useable facilities	NR			
C-4	Evaluation of off-post community facilities	NR			
C-5	Storage and maintenance facilities (including nuclear weapons)	NR			
C-6	Coordination hospitals, medical and dental facilities with Surgeon General	NR			
C-7	Coordination of aviation facilities with FAA	NR			
C-8	Coordination air traffic control and navigational aids with USACC	NR			
C-9	Tabulation of types and numbers of aircraft	NR			
C-10	Evaluation of laboratory, research and development, and technical maintenance facilities	NR			
C-11	Coordination chapels with Chief of Chaplains	NR			
C-12	Review food service facilities by USATSA	NR			
C-13	Automated data processing system or equipment approvals—cost analysis when ADP and/or communication centers not co-located with related facilities	NR			
C-14	Coordination postal facilities with U.S. Postal Service Regional Director	NR			
C-15	Laundry and dry cleaning facilities coordination with ASD(I&L)	NR			
C-16	Tenant facilities coordination with installation where sited	NR			
C-17	Facilities for or exposed to explosions, toxic chemicals, or ammunition—review by DDESB (See also Item 8-4)		A/B		
C-18	Analysis of deficiencies	NR			
C-19	Consideration of alternatives	R	A/B		
C-20	Determination whether occupants will include physically handicapped or disabled persons	NR			
C-21	As-build drawings for alterations or additions	R	A/B		
C-22	Availability of Standard Design or site adaptable designs	R	A/B		
	Other Architectural & Structural (List and number items)				

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

TO BE DETERMINED – Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED – Significant information summarized or explained and attached.

DOCUMENT ATTACHED – Significant information is in an existing document which is attached.

*BY WHOM (Check and insert appropriate letter)

A – OFAE
B – Using Service
C – Construction Service
D – Designer
E – Other (Check Comments Attached and explain)

documentation checklist

DA FORM 5023-C-R, Feb 82

IV-136

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
D-1	Fuel considerations and cost comparison analysis	NR			
D-2	Energy requirements appraisal (ERA)	NR	A B		
D-3	Conformance with DOD Energy Reduction requirements	NR	A B		
D-4	Evaluation of existing and/or proposed utility systems	NR			
	Other Mechanical and Utility Systems (List and number items)				

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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documentation checklist

DA FORM 5023-D-R, Feb 82

E. ENVIRONMENTAL CONSIDERATIONS

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
E-1	Environmental impact assessment	NR			
E-2	EIA conclusions require Environmental Impact Statement	NR			
E-3	Determination of health, environmental or related hazards. Assistance to determine existence of any health, environmental or related hazard may be requested from Aberdeen Proving Ground, MD 21010, the Office of the Surgeon General, Attn: DASG-HCH (Army Environmental Hygiene Agency)	NR			
E-4	Air/water pollution permit, coordination with agencies and compliance with standards at Federal, state and local level	NR			
E-5	Corrective measures associated with Environmental Impact Statements or assessment—list separately and evaluate.	NR			
	Other environmental considerations (list and number items)				

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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documentation checklist

DA FORM 5023-E-R, Feb 82

ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached

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B – Using Service

C – Construction Service

D – Designer

E – Other (Check Comments Attached and explain)

technical data checklist

DA FORM 5024-R, Feb 82

IV-139

A. SPECIAL CONSIDERATIONS

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
A-1	Factors of risk, restriction or unusual circumstance expected to increase costs beyond applicable area averages	NR			
A-2	Construction phasing requirements	R	B		
A-3	Functional support equipment (mechanical, electrical, structural, and security) to be built in	NR			
A-4	Equipment in place and justification	R	B		
A-5	Other equipment and furniture (O&MA, OPA) and costs	NR			
A-6	Special studies and tests (hazards analyses, compatibility testing, new technology testing, etc.)	NR			
A-7	Type of construction (permanent, temporary, semi-permanent) PERM.	R	B		
A-8	Government furnished equipment (quantities, procurement time, availability and special handling and storage requirements). Funds used for procurement. FIXTURES	R	A B		
	Other special considerations (list and number items)				

FIXTURES MAY BE PROCURED BY THE GOVT. IN ADVANCE OF INSTALLATION TO ASSURE MINIMUM COST.

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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technical data checklist

DA FORM 5024-A-R, Feb 82

B. SITE DEVELOPMENT

	ITEM	Required or Not Required	To Be Determined*	Comment Attached	Document Attached
B-1	Construction restrictions or guidelines pertaining to				
(A)	site access and preferred construction routes	R	B/A		
(B)	Airfield clearance, explosive storage, working hours, safety, etc.	NR			
(C)	Facilities and/or functions or adjoining areas (structures, materials, impact)	R	B/A		
B-2	Real estate actions (acquisition, disposal, lease, right-of-way)	NR			
B-3	Demolition/relocation required (data)				
(A)	Special considerations due to explosives/radioactivity/ chemical contamination/asbestos emissions/toxic gases	R	B/A		
(B)	Restrictions on disposal of demolished/relocated material including hazardous waste FLUOR. TUBES	R	B/A		
B-4	Pavement types and requirements (including traffic surveys and MTMC coordination)	NR			
B-5	Landscape considerations				
(A)	Protection of existing vegetation	NR			
(B)	Stockpile topsoil	NR			
	Other Site Development (List and number items)				

- FLUORESCENT BULBS MAY BE CONSIDERED HAZARDOUS WASTE.
- BALLASTS MAY CONTAIN PCB'S.

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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technical data checklist

DA FORM 5024-B-R, Feb 82

IV-141

C. ARCHITECTURAL & STRUCTURAL

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
C-1	Vibration-producing equipment requiring isolation	NR			
C-2	Seismic zone and other design load criteria (typhoon, hurricane, earthquake loads, high or low loss potential)	NR			
C-3	Protective shelter evaluation and resistant design criteria (conventional/nuclear blast and radiation, chemical/biological)	NR			
C-4	Unusual foundation requirements (pier, pile, caisson, deep foundations, mat, special treatment, permafrost areas, soil bearing)	NR			
C-5	Designation and strength of units to be accommodated	NR			
C-6	Requirements and data for special design projects	NR			
C-7	Unusual floor and roof loads (safes, equipment)	NR			
C-8	Security features (arms rooms, vaults, interior secure areas)	NR			
	Other Architectural & Structural (List and number items)				

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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technical data checklist

DA FORM 5024-C-R, Feb 82

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
D-1	Special mechanical requirements or considerations (elevator, crane, hoist, etc.)	NR			
D-2	Special peak usage periods and peak leveling techniques				
D-3	Maintenance considerations (accessibility of equipment, compatibility with existing equipment)	R	B/D		
D-4	Plumbing—availability, general system type and characteristics (proposed and/or existing, incl. compressed air and gas)				
D-5	Heating—availability, general system type and characteristics (proposed and/or existing)	NR			
D-6	Ventilating, air condition/refrigeration—availability, general system type and characteristics (proposed and/or existing)	NR			
D-7	Electrical—availability, general system type and characteristics incl. airfield lighting, communication, etc. (proposed and/or existing)	R	D		
D-8	Water supply/waste treatment—availability, general system type and characteristics (proposed and/or existing)	NR			
D-9	Energy requirements/fuel conversion (sources, availability, loads, types of fuel, etc.)	NR			
D-10	Solar energy evaluation	NR			
	Other Mechanical & Utility Systems (List and number items)				

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technical data checklist

DA FORM 5024-D-R, Feb 82

E. ENVIRONMENTAL CONSIDERATIONS

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
E-1	Waste water treatment, air quality, and solid waste disposal criteria	NR			
	Other Environmental Considerations (List and number items)				

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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technical data checklist

DA FORM 5024-E-R, Feb 82

IV-144

F. FIRE PROTECTION

ITEM		Required or Not Required	* To Be Determined	Comment Attached	Document Attached
F-1	Special fire protection systems or features (detection and suppression equipment, hazards, etc.)	R	D		
	~~Other~~ Fire Protection Considerations (List and number items)				

- LIGHT FIXTURES ARE REQ'D TO ~~BE~~ COMPATIBLE WITH ULTRAVIOLET FIRE DETECTOR SENSORS.
- WE RECOMMEND A TEST PRIOR TO DESIGN DRAWINGS BEING AUTHORIZED TO VERIFY COMATIBILITY OF MFR. FIXTURES & SENSORS.

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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technical data checklist

DA FORM 5024-F-R, Feb 82

installation: MILAN ARMY AMMUNITION PLANT

project: PACKAGES 1 THRU 5

project number
temporary: TP-1 THRU 5 program year FY '95

permanent: _____ category code _____

point of contact:

user
name BRAD McCREADY date _____
title SMCM-EN phone 901-686-6183
autovon _____

dfae
name _____ date _____
title _____ phone _____
autovon _____

engineer district
name TONY BATTAGLIA date _____
title CESAM-EN phone 205-690-2618
autovon _____

other (A-E)
name _____ date _____
title _____ phone _____
autovon _____

reviewed by:

installation facility engineer
name _____ date _____
title _____ phone _____
autovon _____

approved by:

macom engineer
name _____ date _____
title _____ phone _____
autovon _____

project development brochure, PDB-2

DA FORM 5021-R, Feb 82

IV-146

facility

MILAN ARMY AMMUNITION PLANT

MILAN, TENNESSEE

project coordinator for using service

BRAD McCREADY

MAAP - ARMY

detailed functional requirements, PDB-2

OBJECTIVE

THE OBJECTIVE IS TO IMPROVE EXISTING LIGHTING CONDITIONS BY PROVIDING NEW FIXTURES (WHERE FEASIBLE) WHICH WILL OFFER A REDUCED ENERGY CONSUMPTION OVER REPAIR OF THE EXISTING FIXTURES. FIXTURES TO BE SUITABLE FOR THE HAZARD CLASSIFICATION IN WHICH THEY OPERATE.

SOLUTION

PROVIDE OR REUSE EXISTING FLUORESCENT FIXTURES OVER CONVEYOR BELTS & AT SPECIFIC TASK LIGHTING. PROVIDE HID LIGHTING FOR BUILDING, RAMP, & LOADING AREAS.

detailed functional requirements, PDB-2

DA FORM 5021-2-R, Feb 82

background information

THE EXISTING FACILITIES ARE OLD WITH MOSTLY INCANDESCENT LIGHTING. LIGHTING AT THESE FACILITIES NEEDS TO BE IMPROVED, AND IT IS POSSIBLE TO INSTALL A MORE ENERGY EFFICIENT FORM OF LIGHTING. THIS LIGHTING CHANGE OUT IS LIMITED TO AVAILABLE CLASS 2, DIVISIONS 1 & 2, GROUPS E, F & G EXPLOSION PROOF FIXTURES.

detailed functional requirements, PDB-2

summary data

SEVERAL OPTIONS WERE EXAMINED TO PROVIDE QUALITY LIGHTING AND YET PROVIDE A HIGH SAVINGS TO INVESTMENT RATIO AND A GOOD PAYBACK PERIOD (<1 YEARS). THE BEST RESULTS WERE PACKAGED TOGETHER INTO 5 PROJECTS:

- PACKAGE 1 - $545,000
- PACKAGE 2 - $313,000
- PACKAGE 3 - $400,000
- PACKAGE 4 - $305,000
- PACKAGE 5 - $329,000

TOTAL - $1,900,000

detailed functional requirements, PDB-2

DA FORM 5021-4-R, Feb 82

detailed data

organization:
MILAN ARMY
AMMUNITION PLANT
MILAN, TENNESSEE

contact: DACA 01-94-D-0007

personnel:

THESE PACKAGES PROVIDE IMPROVED LIGHTING ~~FOR~~ THE ~~FOLLOWING~~ BUILDINGS:

- PACKAGE 1 - BLDG A4, A6, B10, B12, D16 - ALT. 4
  B-14, O-1, O-4, X-26 - ALT. 4
- PACKAGE 2 - BLDG X-14, X-18 - ALT. 4
- PACKAGE 3 - BLDG O-3, O-10 - ALT. 4
- PACKAGE 4 - BLDG O-41, ALT-4
  X-27, X-41 - ALT. 4
- PACKAGE 5 - BLDG B-14, ALT. 4
  B-18, H-115 - ALT. 4

detailed functional requirements, PDB-2

DA FORM 5021-5-R, Feb 82

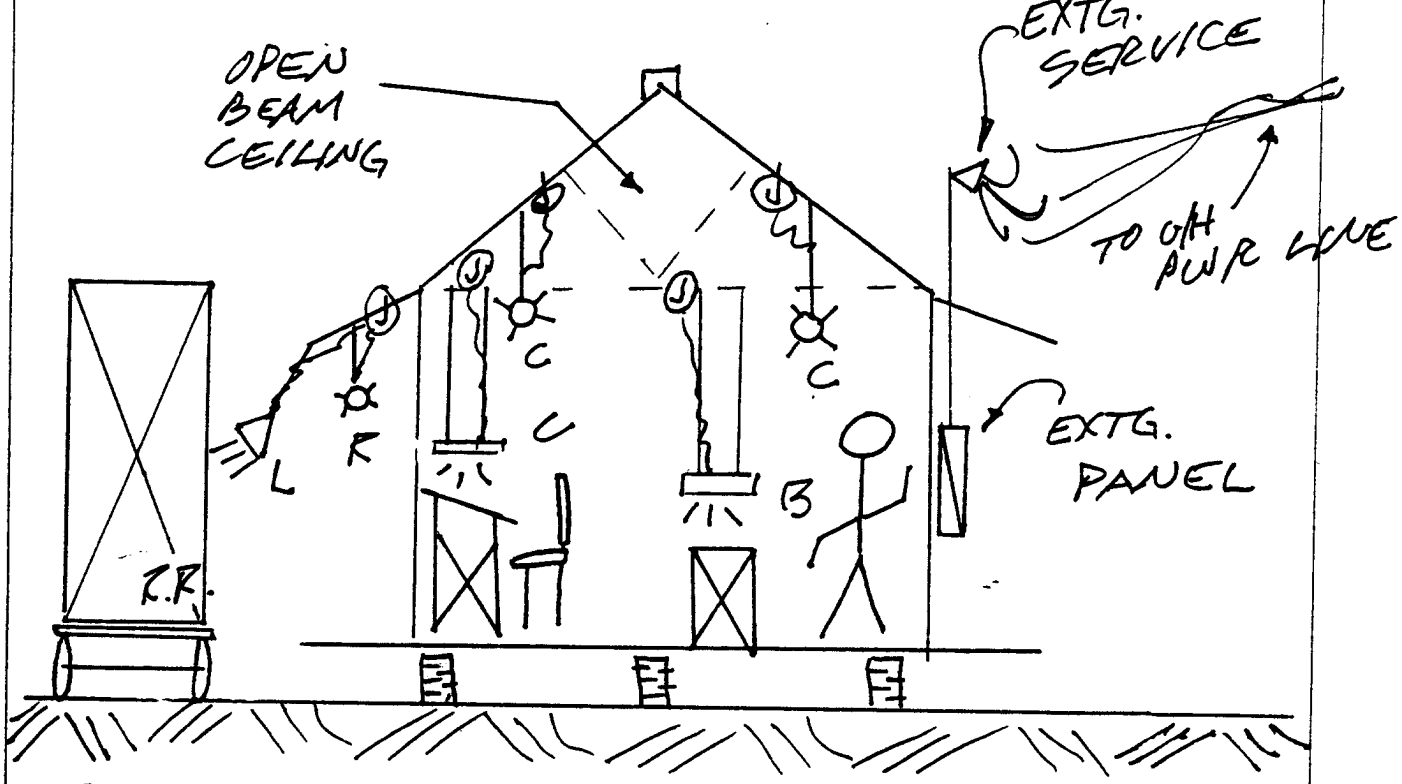
REMOVE FIXTURES PER "ALTERNATE" DESCRIPTION

PROVIDE EXTRA CONDUIT & WIRE AS NECESSARY TO RELOCATE FIXTURES NEARBY (WITHIN 10 FT.)

TYPICAL EXISTING BUILDING - ELECTRICAL JUNCTION BOXES EXISTING - REPLACE WITH FIXTURES AS INDICATED:

B FLUORESCENTS - NEW OR REUSE EXISTING

C, R, L HID's - NEW AS PER PACKAGE ALTERNATE DESCRIPTIONS.



B = BELT LTG.
C = BLDG LTG.
R = RAMP LTG.
L = LOADING LTG.

(J) = JUNCTION BOX

facilities requirements sketch, PDB- 1/2

DA FORM 5022-R, Feb 82

A. SPECIAL CONSIDERATIONS

	ITEM	Required or Not Required	To Be * Determined	Comment Attached	Document Attached
A-1	Cost estimates for each primary and supporting facility	R	D		
A-2	Telecommunications system coordination with USACC and authorization for exceptions	NR			
A-3	Coordination with state and local governmental requirements (blind vendors, medical facilities, construction and operating permits, clearinghouse ccoordination, etc.)	NR			
A-4	Assignment of airspace	NR			
A-5	Economic analysis of alternatives	R	D		
A-6	Approval for new starts	NR			
A-7	International balance of payments (IBOP) coordination with U.S. European command and NATO—overseas cost estimates and comparables (include rate of exchange used in estimates)	NR			
A-8	Impact on historic places—on site survey by authorized archeologist and coordination with state historic preservation officer and advisory council on historic preservation	NR			
A-9	Exceptions to established criteria	R	A		
A-10	Coordination with various staff agencies (Provost Marshall-physical security, etc.)	R	A		
A-11	Identification of related or support projects (so projects can be coordinated)	NR			
A-12	Required completion date	R	A		
	Other Special Considerations (List and number items)				

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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documentation checklist

DA FORM 5023-A-R, Feb 82

IV-153

B. SITE DEVELOPMENT

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
B-1	Consultation with the District Office to determine and evaluate flood plain hazards	NR			
B-2	Preparation, submission, and/or approval of new				
(A)	General Site Plan	NR			
(B)	Annotated General Site Plan	NR			
(C)	Sketch Site Plan	NR			
(D)	Facilities Requirements Sketch	NR			
B-3	Preparation of				
(A)	Site Survey	NR			
(B)	Subsoil information	NR			
B-4	Approval by Department of Defense Explosive Safety Board (DDESB) for Safety Site Plan	NR			
	Other Site Development Considerations (List and number items)	NR			

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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documentation checklist

DA FORM 5023-B-R, Feb 82

C. ARCHITECTURAL & STRUCTURAL

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
C-1	Reconciliation with troop housing programs and requirements	NR			
C-2	Evaluation of existing facilities (including degree of utilization)	R	D		
C-3	Approval for removal and relocation of existing useable facilities	NR			
C-4	Evaluation of off-post community facilities	NR			
C-5	Storage and maintenance facilities (including nuclear weapons)	NR			
C-6	Coordination hospitals, medical and dental facilities with Surgeon General	NR			
C-7	Coordination of aviation facilities with FAA	NR			
C-8	Coordination air traffic control and navigational aids with USACC	NR			
C-9	Tabulation of types and numbers of aircraft	NR			
C-10	Evaluation of laboratory, research and development, and technical maintenance facilities	NR			
C-11	Coordination chapels with Chief of Chaplains	NR			
C-12	Review food service facilities by USATSA	NR			
C-13	Automated data processing system or equipment approvals—cost analysis when ADP and/or communication centers not co-located with related facilities	NR			
C-14	Coordination postal facilities with U.S. Postal Service Regional Director	NR			
C-15	Laundry and dry cleaning facilities coordination with ASD(I&L)	NR			
C-16	Tenant facilities coordination with installation where sited	NR			
C-17	Facilities for or exposed to explosions, toxic chemicals, or ammunition—review by DDESB (See also Item 8-4)		A/B		
C-18	Analysis of deficiencies	NR			
C-19	Consideration of alternatives	R	A/B		
C-20	Determination whether occupants will include physically handicapped or disabled persons	NR			
C-21	As-build drawings for alterations or additions	R	A/B		
C-22	Availability of Standard Design or site adaptable designs	R	A/B		
	Other Architectural & Structural (List and number items)				

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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documentation checklist

DA FORM 5023-C-R, Feb 82

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
D-1	Fuel considerations and cost comparison analysis	NR			
D-2	Energy requirements appraisal (ERA)	NR	A/B		
D-3	Conformance with DOD Energy Reduction requirements	NR	A/B		
D-4	Evaluation of existing and/or proposed utility systems	NR			
	Other Mechanical and Utility Systems (List and number items)				

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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documentation checklist

DA FORM 5023-D-R, Feb 82

IV-156

E. ENVIRONMENTAL CONSIDERATIONS

	ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
E-1	Environmental impact assessment	NR			
E-2	EIA conclusions require Environmental Impact Statement	NR			
E-3	Determination of health, environmental or related hazards. Assistance to determine existence of any health, environmental or related hazard may be requested from Aberdeen Proving Ground, MD 21010, the Office of the Surgeon General, Attn: DASG-HCH (Army Environmental Hygiene Agency)	NR			
E-4	Air/water pollution permit, coordination with agencies and compliance with standards at Federal, state and local level	NR			
E-5	Corrective measures associated with Environmental Impact Statements or assessment—list separately and evaluate.	NR			
	Other environmental considerations (list and number items)				

REQUIRED OR NOT REQUIRED – Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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documentation checklist

DA FORM 5023-E-R, Feb 82

See Tech. Data Checklist Item	ITEM	Required or Not Required	To Be Determined *	Comment Attached	Document Attached

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design data checklist

DA FORM 5025-R, Feb 82

IV-15B

B. SITE DEVELOPMENT

See Tech. Data Checklist Item		ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
B-1	B-1	Required site plans (incl. design and construction factors)				
	(A)	Site access and preferred construction routes	R	B/C		
	(B)	Site restrictions (airfield clearance, explosive storage, etc.)	R	B/C		
	(C)	Existing facilities/functions on adjoining areas (structures, materials, impact)	R	B/C		
	(D)	Disposal areas (trash, excavated material, constraints)	R	B/C		
	(E)	Borrow and spoil areas	NR			
	(F)	Grades or contours existing	NR			
	(G)	Existing trees, turf, ground cover, landscape development, erosion control	NR			
	(H)	Bridges and fences (applicable design criteria)	NR			
	(I)	Railroads (routing, sidings, docks, yards, grounding)	NR			
	(J)	Fire station and security police location	NR			
	(K)	Site utilities—capacity and quantity available to project (sanitary and storm sewers, drainage ditches, water and gas service, communication lines, hydrants and sprinklers, etc.)	NR			
	(L)	New facilities clearly identified	NR			
	(M)	Necessary support facilities required for complete functional project (warehouse, igloo, fuel storage, waste treatment, etc.)	NR			
C-4	B-2	Subsoil conditions (actual or expected—groundwater, permafrost, etc.)	NR			
B-2	B-3	Real estate actions (acquisition, disposal, lease, right-of-way)	NR			
B-3	B-4	Demolition/relocation required to clear site (date)	NR			
B-4	B-5	Pavement types and requirements				
	(A)	Design loading and use frequency by type of paving	NR			
	(B)	Street size and layout (traffic control)	NR			
	(C)	Parking lots (signage, etc.)	NR			
	(D)	Sidewalks and curbs (handicapped, etc.)	NR			
	(E)	Gutters, culverts and other drainage factors	NR			
	(F)	Runways, aprons and taxiways	NR			
	(G)	Tie-down anchors or grounds	NR			
	(H)	Special surface conditions required	NR			
D-9, D-10	B-6	Energy conservation siting and features (wind solar, etc.). See also DDC Item D-13 (D) & (E)	NR			

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- E – Other (Check Comments Attached and explain)

design data checklist

DA FORM 5025-B-1-R, Feb 82

IV-159

B. SITE DEVELOPMENT (Continued)

See Tech. Data Checklist Item		ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
B-5	B-7	Landscape treatment				
	(A)	Preservation of existing features	NR			
	(B)	Proposed planting (low maintenance species, locations away from power lines, etc.)	NR			
B-5	B-8	Storm drainage (See also Item E-4)				
	(A)	Total run-off area affecting project	NR			
	(B)	Design intensity for floods	NR			
	(C)	Design of storm drainage system to include pick-up system and outfall lines	NR			
	B-9	Consideration of Coastal Zone Management Act (PL 92-583, 1972; Amendment PL 94-370, 1976)	NR			
		Other Site Development Considerations (List and number items)				

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design data checklist

DA FORM 5025-B-2-R, Feb 82

IV-160

C. ARCHITECTURAL & STRUCTURAL

See Tech. Data Checklist Item		ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
	C-1	Material availability limitations (include fill and paving)	NR			
	C-2	Architectural style (existing, planned or desired, use of pre-engineered buildings considered)	NR			
C-7	C-3	Floors (type, finish, special loading, subgrade moisture control, low maintenance types particularly in spill areas)	NR			
C-3	C-4	Walls	NR			
	(A)	Exterior (materials, sealing of joints, general maintenance)	NR			
	(B)	Interior walls and partitions (material, finish, fire resistance, subgrade moisture control)	NR			
	C-5	Ceilings (height, finish, acoustics)	NR			
	C-6	Windows (type, size, special treatment)	NR			
	C-7	Doors (type, size, power operation, panic hardware, durability)	NR			
	C-8	Hardware (finish, location, special metal restrictions, durability)	NR			
	C-9	Special finishes (protective coatings, non-sparking, conductive, acid-resistant)	NR			
C-8	C-10	Security features (windows, doors, hardware, construction of walls, floors & ceilings, arms rooms, vaults, etc.)	NR			
	C-11	Sound attenuation requirements (expected and required levels, location)	NR			
	C-12	Stairs, elevators and chutes (location, size, type of usage)	NR			
	C-13	Loading docks and canopies	NR			
C-1	C-14	Vibration-producing equipment requiring isolation	NR			
C-4	C-15	Unusual foundation requirements (pier, pile, caisson, deep foundations, mat, special treatment, creep control)	NR			
	C-16	Span or unusual clearance requirements (span or height)	NR			
	C-17	Special bay sizes (reflect access dimensions)	NR			
	C-18	Overhead support requirements (hoists, cranes)	NR			
C-7	C-19	Roof loads and requirements (live/dead loads, materials, access, low maintenance features like exterior drains, etc.)	NR			
	C-20	Structural specialities (slabs, sumps, trenches, pits)	NR			
C-2	C-21	Seismic zone design criteria	NR			
C-2	C-22	Area wind loads (summer/winter prevailing wind, hurricane, typhoon)	NR			
C-3	C-23	Protective shelter evaluation and resistant design criteria	NR			
	(A)	Explosive/nuclear blast (protective, resistive, suppressive, venting and containment structures)	NR			
	(B)	Radiation protection (type of radiation, intensity, source)	NR			
	(C)	Chemical/biological protection	NR			

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design data checklist

DA FORM 5025-C-1-R, Feb 82

IV-161

C. ARCHITECTURAL & STRUCTURAL (Continued)

See Tech. Data Checklist Item		ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
C-5	C-24	Designation and strength of units to be accommodated	NR			
C-6	C-25	Requirements for special design projects	NR			
	C-26	Safety features (occupant load, maximum travel distance to exits, hazard to be controlled or eliminated)	NR			
	C-27	Special design features for handicapped.	NR			
		Other Architectural and Structural (list and number items)				

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design data checklist

DA FORM 5025-C-2-R, Feb 82

IV-162

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS

See Tech. Data Checklist Item		ITEM	Required or Not Required	To Be Determined*	Comment Attached	Document Attached
D-1	D-1	Special mechanical requirements or considerations	NR			
D-2	D-2	Special peak usage periods and peak leveling techniques	NR			
D-3	D-3	Maintenance considerations (equipment room size, layout, location, general accessibility of equipment, compatibility with existing equipment.)	R	D		
D-9	D-4	Energy monitoring control system (EMCS) and permanent utilities metering	NR			
D-4	D-5	Plumbing system (proposed and/or existing)	NR			
	(A)	General piping and storage system	NR			
	(1)	Materials (galvanized, copper, etc.)	NR			
	(2)	Insulation	NR			
	(3)	Natural or LP gas	NR			
	(4)	Venting	NR			
	(5)	Distilled water	NR			
	(6)	Compressed air	NR			
	(7)	Hospital & surgical gases	NR			
	(8)	Other (chemical, fuel)	NR			
	(B)	Facility water supply	NR			
	(C)	Garbage disposal	NR			
	(D)	Sanitary drainage system	NR			
	(E)	Grease interception	NR			
	(F)	Chemical waste drainage & disposal (incl. explosive process waste)	NR			
	(G)	Radioactive waste	NR			
	(H)	Drinking fountains	NR			
	(I)	Water treatment	NR			
	(J)	Emergency fixtures (showers, eyewash fountains)	NR			
D-5	D-6	Heating system	NR			
	(A)	Existing generation plant	NR			
	(1)	Location and distance from new facility	NR			
	(2)	Equipment (type, age, fuel, etc.)	NR			
	(3)	Current loads (average, peak, reserves for this and other projects, load leveling system)	NR			
	(4)	Type of plant	NR			
	(5)	Manning & support requirements	NR			
	(6)	Pollution controls	NR			
	(7)	Type of product	NR			

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design data checklist

DA FORM 5025-D-1-R, Feb 82

IV-163

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS (Continued)

See Tech. Data Checklist Item		ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
D-5	D-6	Heating system (continued)	NR			
	(B)	Requirements for proposed facility				
	(1)	Type of system				
	(2)	Heat load requirements (special temperature demands)				
	(3)	Controls, metering & EMCS requirements				
	(4)	Distribution system (valves, steam pressure, fluid temperature)				
	(5)	Corrosion control				
	(6)	Insulation				
	(7)	Additional equipment specifications				
D-6	D-7	Ventilating/air conditioning/refrigeration system				
	(A)	Existing facilities				
	(1)	Location				
	(2)	Type of plant (refrigeration, chilled water, etc.)				
	(3)	Current loads (average, peak, reserves for this and other projects, load leveling system)				
	(4)	Type of product (CFM, temperature, GPM, etc.)				
	(5)	Distribution system				
	(6)	Special filtration requirements				
	(7)	Special humidity, ventilation, or temperature requirements				
	(8)	Security restrictions for open ducting				
	(9)	Freezers or coolers				
	(B)	Requirements for proposed facility				
	(1)	Type of system				
	(2)	Temperature, humidity and vent conditions special to this design				
	(3)	Control, cycling, metering and EMCS requirements				
	(4)	Distribution (length of extension, location, fluid temperature)				
	(5)	Corrosion control				
	(6)	Insulation				
	(7)	Special fire and security considerations for this project				
	(8)	Occupancy hours and days per week				
D-5, D-6	D-8	Heat and chilled water distribution system				
	(A)	Heat system				
	(1)	Type of service				
	(2)	Existing system components				
	(3)	Valving and sectionalizing requirements				
	(4)	Allowable shut-down of service for main connections				
	(5)	Sizing for future facilities				

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design data checklist

DA FORM 5025-D-2-R, Feb 82

IV-164

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS (Continued)

See Tech. Data Checklist Item		ITEM	Required or Not Required	To Be Determined*	Comment Attached	Document Attached
D-5	D-8	Heat and chilled water distribution system (continued)	NR			
D-6	(B)	Chilled water system				
	(1)	Type of service				
	(2)	Existing system components				
	(3)	Valving and sectionalizing requirements				
	(4)	Allowable shut-down of service for main connections				
	(5)	Sizing for future facilities				
D-7	D-9	Electrical system				
	(A)	Power service characteristics & location	R	D		
	(B)	Stand-by power (available & required)	NR			
	(C)	Special interior functional lighting requirements (brightness, night, emergency, justification)	R	A/B		
	(D)	Uninterruptible power required	NR			
	(E)	Commercial tie-in requirements & restrictions	NR			
	(F)	Potential for increased power service needed	R	D		
	(G)	Service outage duration limitations	R	A/B		
	(H)	Security alarm systems (type & location)	NR			
	(I)	Street, parking or security lighting (brightness, hours, switching, etc.)	NR			
	(J)	Types of fixtures required (including mounting, NEC classification, etc.)	R			
	(K)	Telephone extension circuits or conduit (functional support & outlet location)	NR			
	(L)	Television circuits or conduit (functional support & outlet location)	NR			
	(M)	Intercom requirements (locations, type)	NR			
	(N)	Equipment list w/power requirements	NR			
	(O)	Special communications requirements (filtering, maximum fluctuation limitations, convertors, etc.)	NR			
	(P)	Electronic shielding & interference measures (frequency involved)	NR			
	(Q)	Special switches & control outlets, receptacle requirements, etc.	NR			
	(R)	Grounding requirements, lightning protection	NR			
	(S)	Hazardous environment requirements (location, activity involved, NEC classification, type of hazard)	R	D		
	(T)	Corrosion control (cathodic protection)	NR			

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design data checklist

DA FORM 5025-D-3-R, Feb 82

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS (Continued)

See Tech. Data Checklist Item		ITEM	Required or Not Required	To Be Determined*	Comment Attached	Document Attached
D-7	D-9	Electrical system (continued)				
	(U)	Other special power requirements (traffic control, antenna, etc.)	NR			
	(V)	Applicability of task lighting considerations	NR			
	(W)	Power management and metering requirements	NR			
	D-10	Electrical Distribution				
	(A)	Actual & estimated loads (peak & average (KW demand))	R	D		
	(B)	Utility compnay distribution system (substations, transmission lines, rate schedule, etc.)	NR			
	(C)	Government owned distribution system (switching station, transmission lines, feeders, etc.)	NR			
	(D)	Estimated impact of proposed equipment installation on power factor, load balance and costs for corrective action proposed	NR			
	(E)	Overhead/underground (voltage, conductor size, grounding, etc.)	NR			
	(F)	Estimated power demand factor and diversity factor	NR			
	(G)	Power quality requirements (voltage and frequency regulation)	NR			
	(H)	Power to intrusion, detection alarm systems around perimeter	NR			
	D-11	Airfield lighting requirements	NR			
	(A)	Area & location to be served				
	(B)	Source of power (normal & emergency)				
	(C)	Vault requirements				
	(D)	Primary feeders				
	(E)	Control cabling				
	(F)	Runway lighting (centerline, edge, distance markers, intensity control)				
	(G)	Threshold, approach, & strobe beacon lighting				
	(H)	Visual approach slope indicators (VASI)				
	(I)	Obstructions lighting/barrier markers				
	(J)	Taxiway edge lighting				
	(K)	Helipad/heliport lighting (perimeter, landing direction, hoverlane, etc.)				
D-8	D-12	Water supply system				
	(A)	Source (commercial, well, storage, etc.)				
	(B)	Average rate of supply (FPD at PSI) Current & Future				
	(C)	Treatment requirements				
	(D)	Existing system components (type, size, capacity, age, material, location, valving, pressure, etc.)				

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design data checklist

DA FORM 5025-D-4-R, Feb 82

IV-166

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS (Continued)

See Tech. Data Checklist Item		ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
D-8	D-12	Water supply system (continued)	NR			
	(E)	Chemical analysis of water				
	(F)	Emergency storage requirements				
	(G)	Peak hours of supply (hours & estimated quantity)				
	(H)	Known minimal requirements of supported function or Government equipment (quantity & quality)				
	(I)	Chemical feeder & piping systems				
	(J)	Corrosion control (existing & planned)				
	(K)	Metering or usage restrictions				
	(L)	Location of tie points (available capacity, interruption schedule)				
D-8	D-13	Waste water treatment system				
	(A)	Existing system & components (size, capacity, characteristics)				
	(1)	Treatment plant				
	(2)	Collector sewers				
	(3)	Sewer mains (materials, depth)				
	(4)	Complete treatment – industrial process				
	(5)	Chemical, fuel or oil spill collection facilities				
	(6)	Existing flows (min., avg., peak)				
	(7)	Hydraulic capacity				
	(B)	Known/estimated industrial or functional discharges (quantity & quality)				
	(C)	Contributory population & per capita contribution				
	(D)	Proposed system & components				
	(1)	Treatment plant				
	(2)	Collection sewers				
	(3)	Lift station				
	(4)	Complete treatment (additions or modifications)				
	(5)	Chemical, fuel or oil spill collection facilities				
	(6)	Waste water from portable water treatment plant				
	(7)	Projected flows—average or peak				
	(8)	By-pass restrictions				
	(9)	Location of tie points (available capacity, interruption schedule)				
	(E)	Compliance requirements (federal, state, local)				
	(F)	National Pollution Discharge Elimination System (NPDES) permit				
	(G)	Corrosion control (existing or planned)				

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design data checklist

DA FORM 5025-D-5-R, Feb 82

IV-167

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS (Cont.)

See Tech. Data Checklist Item		ITEM	Required or Not Required	To Be Determined*	Comment Attached	Document Attached
D-9	D-14	Energy Sources	NR			
	(A)	Gas systems (LP, natural, special)				
	(1)	Loads and areas served				
	(2)	Source of gas & type of service				
	(3)	Supply pressure average				
	(4)	Heating valve & type of gas (BTU per cubic foot)				
	(5)	Valving & sectionalizing criteria				
	(6)	Pressure regulation – reduction stations				
	(7)	Existing lines, pumping stations, pressurization, base system				
	(8)	Control & metering				
	(B)	POL systems				
	(1)	Fuel (primary or standby source, grade and analysis)				
	(2)	Storage (tank size, location, type, number of storage days)				
	(3)	Areas served				
	(4)	Fuel requirements (known, estimated, quantity & type)				
	(5)	Distribution system characteristics (piping, types of fuel, pumps, capacities)				
	(6)	Ventilation system (Vapor Emission Control)				
	(7)	Safety specifications				
	(8)	Filter separators				
	(C)	Coal systems				
	(1)	Storage (location & capacity)				
	(2)	Source of supply (primary & emergency)				
	(3)	Type, energy value, analysis (i.e. sulfur, ash, etc.)				
	(D)	Solar energy systems				
	(1)	Building heating, air conditioning, domestic hot water				
	(2)	Heating process water				
	(3)	Collector type & location				
	(4)	Liquid, chemical or rock storage				
	(5)	Freeze protection				
	(E)	Energy conservation data (U values, orientation, passive solar considerations, etc.)				
		Other Mechanical & Utility Systems (list and number items)				

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DA FORM 5025-D-6-R, Feb 82

IV-16B

E. ENVIRONMENTAL CONSIDERATIONS

See Tech. Data Checklist Item		ITEM	Required or Not Required	To Be Determined*	Comment Attached	Document Attached
E-1	E-1	Water quality	NR			
	(A)	Waste water treatment management program (PL 92-500 & PL 95-217)				
	(B)	Water quality criteria & standards (federal, state and local)				
	(C)	Treatment requirements coordinated with EPA				
	(D)	Facilities to be installed to meet regulatory agency criteria				
E-1	E-2	Air quality				
	(A)	Applicable air quality criteria (federal, state and local; PL 95-95 and Clean Air Act Amendment of 1977)				
	(B)	Action taken to comply with requirements				
	(C)	Type & amount of pollutants generated				
	(D)	Results of proposed abatement measures				
	(E)	Existing control equipment & monitoring procedures				
E-1	E-3	Solid waste disposal				
	(A)	Applicable solid waste criteria (federal, state and local)				
	(B)	Waste volume generated (type & characteristics)				
	(C)	Method of disposal (land fill and availability of land, leachate, etc.)				
	(D)	Disposition of recyclable materials for reuse or as combustion fuel				
	(E)	Impact on installation recycling programs				
	E-4	Effects of terrain changes (such as excavations, roadways, drainage structures, etc.)				
	(A)	Measures to control erosion				
E-1	E-5	Treatment of hazardous material				
	(A)	Handling and disposal of plychlorinated biphenyls (PCB) in electrical transformers				
	(B)	Handling and disposal of asbestos materials				
	(C)	Handling and disposal of fiberglass products				
	(D)	Storage of fuels and solvents				
	(E)	Coordination with installation spill control plans				
		Other Environmental Considerations (list and number items)				
	F.	HANDLING AND DISPOSAL OF FLUORESCENT TUBES WITH MERCURY IS CONSIDERED HAZARDOUS W SOME AREAS; PCB BALLASTS IS HAZARDOUS	R	A/B/C		

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DA FORM 5025-E-R, Feb 82

IV-169

F. FIRE PROTECTION

See Tech. Data Checklist Item		ITEM	Required or Not Required	* To Be Determined	Comment Attached	Document Attached
F-1	F-1	General design guidance	NR			
	(A)	Occupancy type (see NFPA 101, Chap 4)	NR			
	(B)	Water supply characteristics (existing or planned extensions) (capacity, pump activation, storage tanks and pumps, etc.)	NR			
	(C)	Mobile fire apparatus (response distance/time)	NR			
	(D)	Fire detection and alarm systems (existing or planned, type, location, etc.)	R	D		
	(E)	Automatic suppression systems (water sprinkler, CO_2, foam etc.—existing or planned	NR			
	(F)	Hazard of contents (low, ordinary, high-see NFPA 101; type—explosives, flammable/toxic chemicals, radioactive materials)				
F-1	F-2	Special fire suppression system requirements				
	(A)	Means of egress				
	(B)	Fire area limitations				
	(C)	Fire walls, partitions, draft curtains				
	(D)	Detection system (type, detectors, supervision, transmitters, annunciators, backup provisions)				
	(E)	Suppression system (damage by water to costly equipment, shut down of operations)				
		Other Fire Protection (list and number items)				

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design data checklist

DA FORM 5025-F-R, Feb 82

IV-170

Light Meter Calibration

AFFILIATED ENGINEERS SE, INC. 3300 SW Archer Road Gainesville, Florida 32608 (904) 376-5500 FAX (904) 375-3479	Made By: WR	Date: 6/12/94	Job No: 93243-20
	Checked By:	Date:	Sheet No: 1 of 1

Calculations For: Ft. Milan - Readings obtained as calibration Check.

FLUKE 8050A DMM W/EXTECH LIGHT ADAPTOR

O/L (Lo Scale)	250 fc mid Scale
21.57 mV (Mid Scale 0.1mV/10LUX) = 2154 LUX	250 fc mid Scale
22.45 mV (mid Scale ") = 2245 LUX	>250 fc mid Scale
21.64 mV (mid Scale ") = 2164 LUX	200 fc (High Scale
190.07 mV (Lo Scale 0.1mV/LUX) = 1,901 LUX	230 fc (Mid Scale
182.31 mV (Lo Scale 0.1mV/LUX) = 1,823 LUX	220 fc (mid Scale)
175.23 mV (Lo Scale 0.1mV/LUX) = 1,752 LUX	200 fc (mid Scale
150.97 mV (Lo Scale ") = 1509 LUX	170 fc (mid Scale)
136.96 mV (Lo Scale ") = 1396 LUX	150 fc (mid Scale)
113.10 mV (Lo Scale ") = 1131 LUX	130 fc (mid Scale
89.3 mV (Lo Scale ") = 893 LUX	100 fc (mid Scale)
93.18 mV (Lo Scale ") = 932 LUX	100 fc (mid Scale
9.86 mV (Mid Scale 0.1mV/10LUX) = 986 LUX	100 fc (mid Scale
7.75 mV (Mid Scale 0.1mV/10LUX) = 775 LUX	75 fc (mid Scale)
72.8 mV (Lo Scale 0.1mV/LUX) = 728 LUX	75 fc (mid Scale
6.58 mV (Mid Scale 0.1mV/10LUX) = 658 LUX	50 fc (mid Scale
5.56 mV (Mid Scale 0.1mV/10LUX) = 556 LUX	50 fc (mid Scale
5.56 mV (Mid Scale 0.1mV/10LUX) = 556 LUX	>50 fc (Lo Scale
4.38 mV (Mid Scale 0.1mV/10LUX) = 438 LUX	50 fc (Lo Scale
4.36 mV (Mid Scale 0.1mV/10LUX) = 436 LUX	<50 fc (mid Scale)
38.97 mV (Lo Scale 0.1mV/LUX) = 389.7 LUX	50 fc (Lo Scale)
30.58 mV (Lo Scale ") = 306 LUX	40 fc (Lo Scale)
23.8 mV (Lo Scale ") = 238 LUX	30 fc (Lo Scale)
2.85 mV (Mid Scale 0.1mV/10LUX) = 285 LUX	30 fc (" ")
2.72 mV (Mid Scale 0.1mV/10 LUX) = 272 LUX	26 fc (" ")
22.65 mV (Lo Scale 0.1mV/LUX) = 227 LUX	26 fc (" ")
10.38 mV (Lo Scale ") = 103.8 LUX	10 fc (" ")
1.50 mV (Mid Scale 0.1mV/10LUX) = 150 LUX	10 fc (" ")
1.99 mV (Mid Scale ") = 199 LUX	15 fc (" ")
12.7 mV (Lo Scale 0.1mV/LUX) = 127 LUX	15 fc (" ")

AFFILIATED ENGINEERS SE, INC. 3300 SW Archer Road Gainesville, Florida 32608 (904) 376-5500 FAX (904) 375-3479	Made By:	Date:	Job No: 93203-20
	Checked By:	Date:	Sheet No: 1 of 2

Calculations For: FT MILAN – Guide Chart for Scale Reference

FLUKE 80/60A DMM W/ EXTECH LIGHT METER

1.0 to 200mV LO SCALE – 0.1mV/LUX) = 10 to 2000LUX

1.0 to 200mV (MID SCALE – 0.1mV/10LUX) = 100 to 20,000LUX

1.0 to 200mV (HI SCALE = 0.1mV/100LUX) = 1,000 to 50,000LUX
(Theoretical 200,000LUX)

(NOTE: ACTUAL DAYLIGHT IS USUALLY 50,000LUX MAX)

Coefficients of Utilization for Fixtures

The following table was used to determine coefficients of utilization for fixtures based on room cavity ratio. Once the proper RCR is calculated, the table will give the correct CU for a specific fixture. This table was used to generate the CU information on the Excel data. CU values were found using the manufacturers' fixture data.

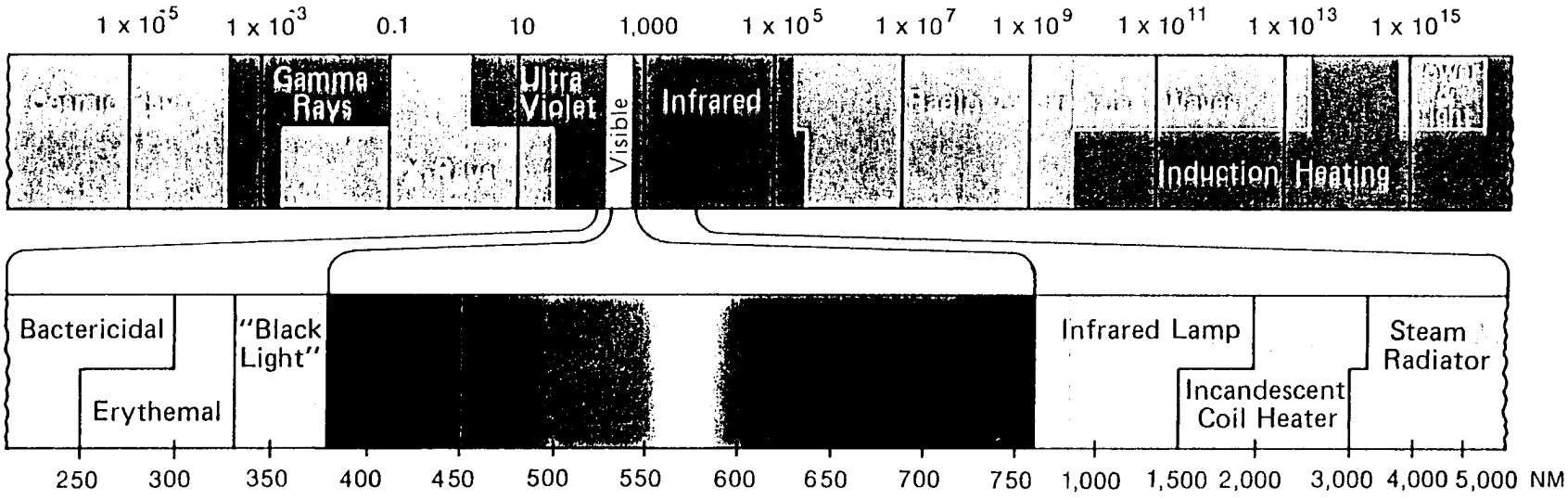
I100,I200,I300		I100,I200,I300(10% Wall)		MV10,MH70,MH10		HP50,HP70,HP10		F212 (30% Wall)	
RCR	CU	RCR	CU	RCR	CU	RCR	CU	RCR	CU
0	.619	0	.590	0	.577	0	.810	0	.736
0.46	.573	0.46	.546	0.46	.531	0.46	.763	0.67	.669
1	.519	1	.494	1	.477	1	.708	1	.636
1.88	.437	1.88	.404	1.88	.393	1.88	.605	1.8	.576
2	.426	2	.392	2	.382	2	.591	2	.561
2.47	.395	2.28	.373	2.47	.351	2.47	.547	2.1	.555
3	.361	3	.324	3	.317	3	.497	3	.496
3.6	.329	3.6	.291	3.76	.278	3.76	.438	3.3	.478
4	.308	4	.269	4	.266	4	.419	4	.435
4.38	.292	4.38	.254	4.38	.251	4.38	.395	4.5	.410
5	.266	5	.229	5	.227	5	.357	5	.384
5.4	.254	5.4	.217	5.4	.216	5.23	.347	5.5	.364
6	.236	6	.198	6	.199	6	.312	6	.344
6.43	.224	6.43	.186	6.16	.195	6.16	.306	6.5	.325
7	.208	7	.171	7	.174	7	.272	7	.306
7.89	.186	7.89	.151	7.89	.154	7.89	.241	7.5	.289
8	.183	8	.149	8	.152	8	.237	8	.272
8.31	.177	8.31	.143	8.31	.147	8.31	.229	8.5	.258
9	.164	9	.131	9	.136	9	.210	9	.244
9.23	.158	9.23	.125	9.23	.131	9.23	.203	9.5	.226
10	.140	10	.107	10	.115	10	.178	10	.208

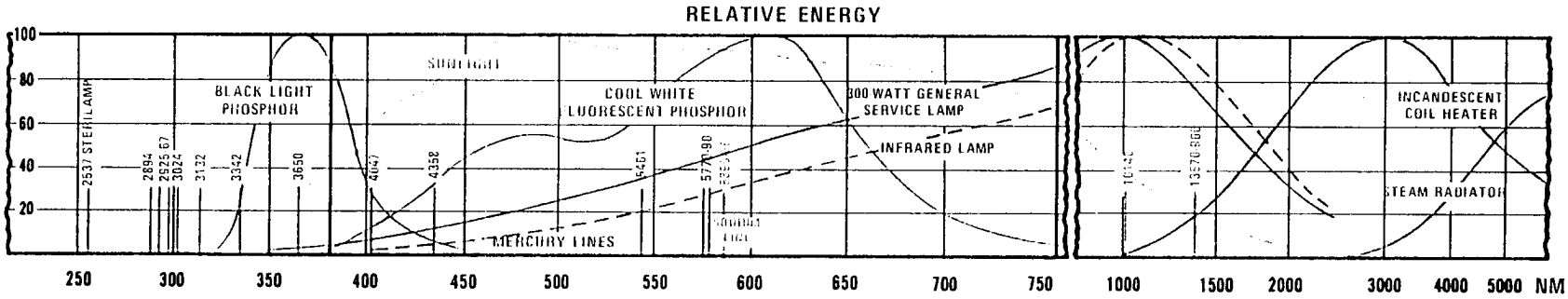
F212 (10% Wall)		F312		F312 (10% Wall)		F208		F208 (10% Wall)	
RCR	CU	RCR	CU	RCR	CU	RCR	CU	RCR	CU
0	.721	0	.736	0	.667	0	.760	0	.760
0.75	.646	0.95	.608	0.95	.591	0.75	.685	0.75	.670
1	.621	1	.601	1	.587	1	.660	1	.640
1.8	.555	1.46	.569	1.88	.520	1.8	.596	1.88	.570
2	.538	2	.532	2	.511	2	.580	2	.560
2.1	.531	2.1	.526	2.68	.467	2.1	.574	2.28	.540
3	.468	3	.472	3	.446	3	.520	3	.490
3.3	.449	3.78	.428	3.78	.399	3.3	.502	3.3	.472
4	.405	4	.415	4	.386	4	.460	4	.430
4.5	.379	4.5	.391	4.5	.362	4.5	.435	4.5	.405
5	.353	5	.367	5	.337	5	.410	5	.380
5.5	.332	5.1	.363	5.1	.333	5.5	.390	5.5	.360
6	.311	6	.328	6	.298	6	.370	6	.340
6.5	.292	6.1	.324	6.44	.282	6.5	.350	6.5	.320
7	.273	7	.292	7	.261	7	.330	7	.300
7.5	.257	7.1	.289	7.1	.258	7.5	.310	7.5	.280
8	.240	8	.259	8	.230	8	.290	8	.260
8.5	.227	8.5	.246	8.5	.217	8.5	.275	8.5	.245
9	.214	9	.233	9	.204	9	.260	9	.230
9.5	.196	9.5	.216	9.5	.187	9.5	.245	9.5	.215
10	.177	10	.199	10	.169	10	.230	10	.200

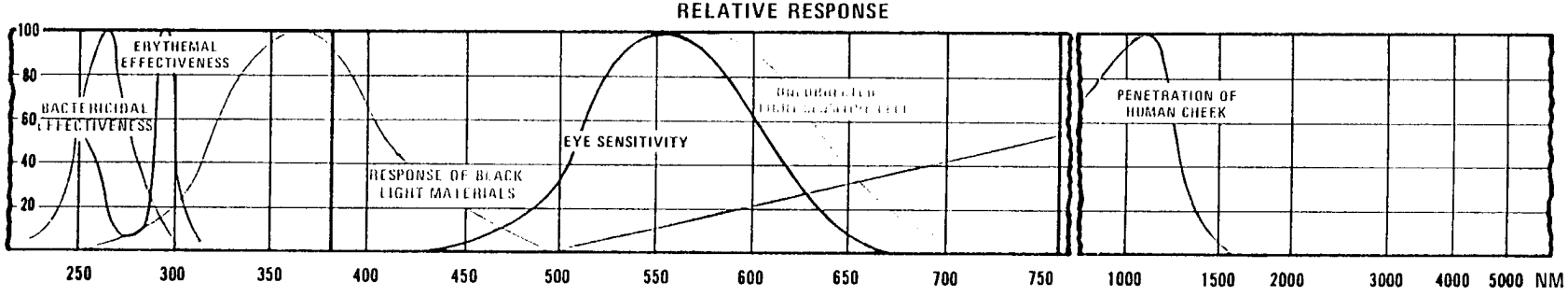
UV Output Data for HID & Fluorescent Lighting

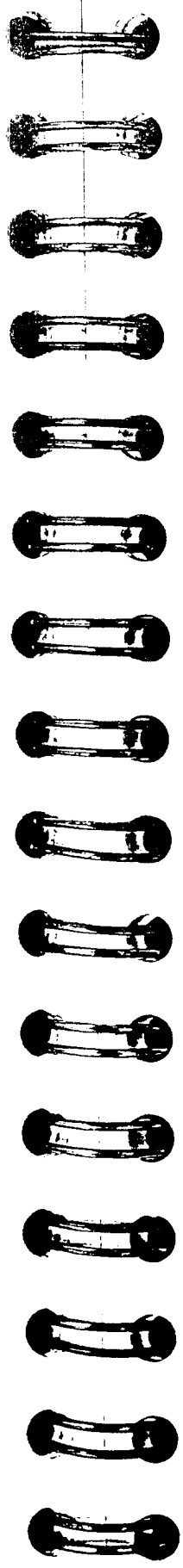
Electromagnetic Spectrum

Wavelength in Nanometers









Light Sources

High Pressure Sodium Lamps

NAPLC high pressure sodium lamps known as Ceramalux lamps are "high intensity discharge lamps" in which the metal sodium is used as the main light producing "gas" in the arc tube. Sodium vapor at very low pressures produces a monochromatic (one-color) radiation spectrum at 590 nm. (yellow light). As the sodium vapor pressure is increased the spectrum broadens to include the entire visible portion of the electromagnetic spectrum.

Standard Ceramalux lamps have a radiation spectra as shown on page 3—21. By sufficient broadening, all colors can be recognized under a Ceramalux HPS source although the predominately yellow source may cause some shift in the observed colors.

Ceramalux 4 lamps have been introduced for use where improved color rendition is needed. In these lamps the "color broadening" characteristic of high pressure sodium light has been extended to produce a source with excellent color rendition characteristics.

Ceramalux lamps use an arc tube of a ceramic material such as polycrystalline alumina. In addition to sodium, the arc tube contains mercury and xenon. The xenon gas acts as starting gas and mercury is used to provide a stable operating voltage for the lamp.

High pressure sodium lamps have the highest efficacies of any "white light" NAPLC lamp and produce between 75–140 lumens per watt, depending upon lamp size.

ECON-O-WATT Lifeguard Vapor Lamps

Where energy conservation is of prime importance and lighting intensities are considered to be more than adequate, Econ-o-watt types in clear or phosphor-coated offer a way to maintain lighting uniformity throughout an area while accomplishing an overall reduction of 25% in energy usage. Lamp light output is also reduced, up to approximately 33%, but local lighting or portable lights can be added whenever a particular task needs more light.

300 W Econ-o-watt lamps are designed to operate only "regulated output" or similar H33 ballasts, on series types H33 isclating transformers, or on lead-peaked ballasts for 400W metal halide lamps. It is advisable to check with the luminaire or ballast manufacturer for compatibility. "For more complete operating characteristics see reference data on pages 3-35-36."

Radiation Characteristics

The mercury arc produces a line spectrum having strong lines in the ultraviolet and visible regions, and some in the infrared. The exact spectral distribution varies greatly with the vapor pressure at which the arc operates. Bactericidal lamps have mercury arcs operating at very low pressures (in the order of a few microns), where most of the radiated energy is at the 253.7 nanometers line in the ultraviolet, in the region most effective in destroying micro-organisms. Some are designed also to

IV-179

generate ozone, for which the 184.9 nm line is most important. Their bulbs must be made of a type of glass or quartz which has a high transmittance for these short wavelengths.

Erythema (sunburn) and the production of Vitamin D are induced by ultraviolet radiation centering around the 296.7 nm line and those immediately on either side of it. Lamps to be used as sources of erythemal energy have bulbs of glass which transmit these wavelengths but cut out the extremely short wavelengths of ultraviolet not found in natural sunlight.

Mercury vapor lamps made for lighting purposes operate at higher vapor pressures, in the order of one to ten atmospheres. At these pressures a large percentage of the radiated energy is in the four important lines of the visible spectrum, 404.7, 435.8, 546.1, and 577.9 nm, and in the near ultraviolet, chiefly at 334.2 and 365 nm. Most of these lamps have quartz arc tubes which have a high transmittance for all wavelengths, but the glass outer bulbs pass only the visible and the near ultraviolet, cutting off virtually all energy below 300 nm. Deep red-purple glass is sometimes used to absorb the visible light and let through only the near ultraviolet for fluorescent effects.

The addition of a color-correcting phosphor to a mercury vapor lamp makes important changes in the spectral energy distribution. The phosphors used for this purpose are selected for their response to the ultraviolet. The total light output of the lamp, as well as the spectral distribution, varies with the composition of the phosphor.

Mercury Lamps have radiation or spectral characteristics such that their color does not generally coincide with that of a black body; hence "color temperature" is not satisfactorily applicable to most mercury vapor lamps, and the term "correlated color temperature" is used. Clear mercury vapor lamps are generally greener than the black body, Beauty lite lamps are generally less green or more blue and the Style-tone lamps are very close to the black body line. For the spectral energy distribution of typical lamps see graphs on page 3—21.

Mercury Self-Ballasted Lamps have almost the same color or radiation characteristics as mercury vapor lamps but generally a little more red is present. This is due to the incandescence of the filament (ballast) operating at low temperatures in series with the mercury vapor arc.

Metal Halide Lamps exhibit somewhat different radiation characteristics than mercury vapor, because the light output is a result of the ionization of other metals such as sodium and scandium, in addition to mercury, in the arc stream. Metal halide colors are generally more blue or blue white than mercury vapor and lie closer to the black body curves. This color can also be modified by the use of phosphor-coated bulbs.

Ceramalux High Pressure Sodium Lamps, because of the influence of sodium and the combination of other metal vapors present, produce a warmer, more consistent color that, for most types, is practically on the black body curve at 2100 K. This distinctive coloring makes these lamps quite acceptable for many interior as well as exterior applications.

Lamp Types

Designations

The identifying desi
from those of incanc
system, established
designations begin
arbitrary number inc
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physical characteris
followed by a hyphe
Where the outer bul
indicating the color

For example, the co

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33	identifies the required. Lam interchangeal operate from
GL	identifies the material and letters are phy
-400	identifies the
/DX	identifies the designation.

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Most mercury vapo
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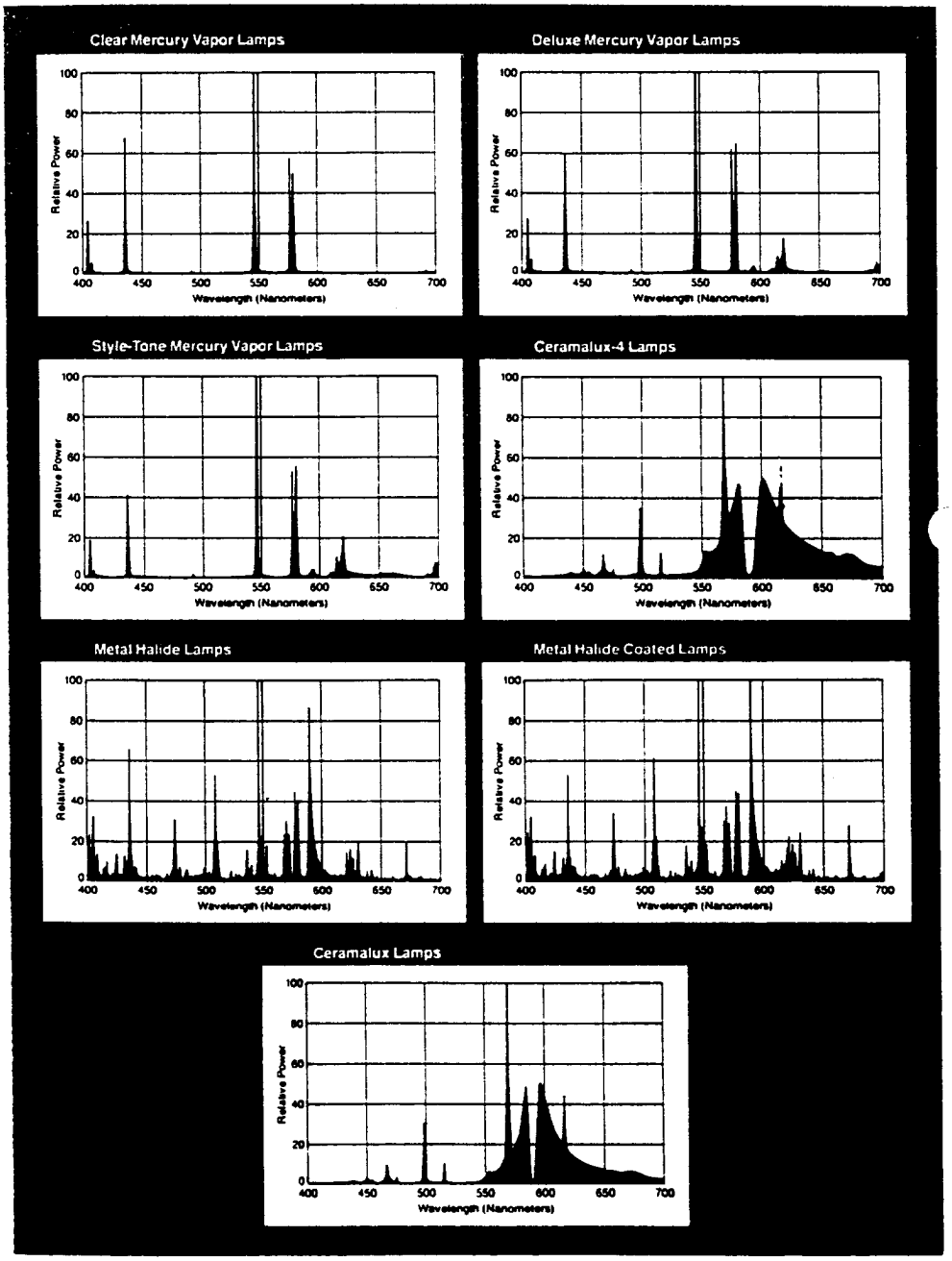
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ballast type with
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/ of 60 cycles.
as 50 cycles for

Spectral Power Distribution

Relative Power for Lamps of Equal Wattage



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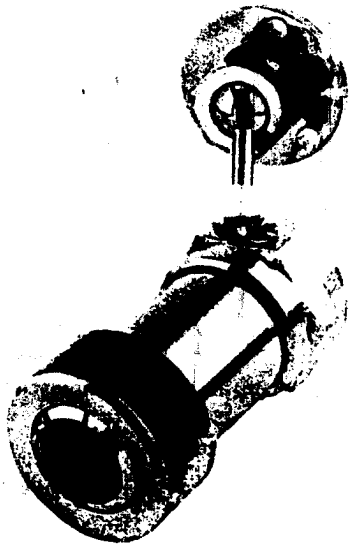
DET TRONICS

INSTRUCTIONS

oi*

Ultraviolet Fire Detector

C7050



APPLICATION

When used in conjunction with Det-Tronics controllers, the C7050 Detector provides continuous and automated fire protection by sensing the ultraviolet (UV) radiation generated by a flame. Its enclosure is explosion-proof, dust-proof, and watertight, making the C7050 suitable for protecting hazardous areas in a wide variety of both indoor and outdoor applications. The detector is not affected by adverse weather conditions or by natural or artificial lighting. The patented oi feature continuously monitors the condition of the detector's optical surfaces to assure that the system is ready to respond to a fire at any time.

FEATURES

- Designed for use in hazardous locations.
- Operates under adverse weather conditions such as wind, rain, snow, high humidity, and extremes of temperature and pressure.
- Insensitive to solar radiation and to normal artificial lighting.
- Patented oi system (optional) continuously checks the sensor's optical surfaces to assure optical integrity.
- Sensor tube is mounted to withstand shock and vibration - meets MIL SPEC 810C.
- Enclosure available in nickel-plated brass, anodized aluminum, or 316 stainless steel.
- Meets FM, CSA, BASEEFA, PTB, CENELEC and Lloyd's requirements.

DESCRIPTION

The C7050 Detector consists of a UV sensitive tube to sense the presence of ultraviolet radiation and the electronic circuitry to generate the output signal that is sent to the controller for processing to determine when an output is to be energized. All components are mounted inside an explosion-proof enclosure. Detectors equipped with the patented oi system have a test lamp (source tube) that emits a calibrated UV test beam and either an external reflective ring or an internal optical arrangement.

SPECIFICATIONS

SPECTRAL SENSITIVITY RANGE--
Det-Tronics UV fire detectors respond to UV radiation over the range of 1850 to 2450 angstrom units (see Figure 1). Detectors are insensitive to direct or reflected sunlight and to normal artificial lighting.

OPTICAL SENSITIVITY RANGE (Cone of Vision)--
The C7050 Detector has a nominal 80 degree cone of vision with the highest sensitivity lying along its central axis. Figure 2 shows a composite view of the detector's cone of vision and response to a constant UV source at various relative distances. Depending upon the intensity of the ultraviolet radiation source, the C7050 can be considered to have a practical application distance of up to about 50 feet (15 meters). Under certain controlled conditions, detectors may be used at greater distances. Since physical obstructions, smoke accumulation, or UV absorbing chemical vapors will prevent UV from reaching the detectors, they should be mounted as close as practical to the probable hazard. The chart of the gasoline reference fire (Figure 3) shows how detector response is related to distance.

*oi is Detector Electronics' Trademark for its patented Optical Integrity Systems. U.S. Patent 3,952,196, United Kingdom Patent 1,534,969, Canada Patent 1,059,598.

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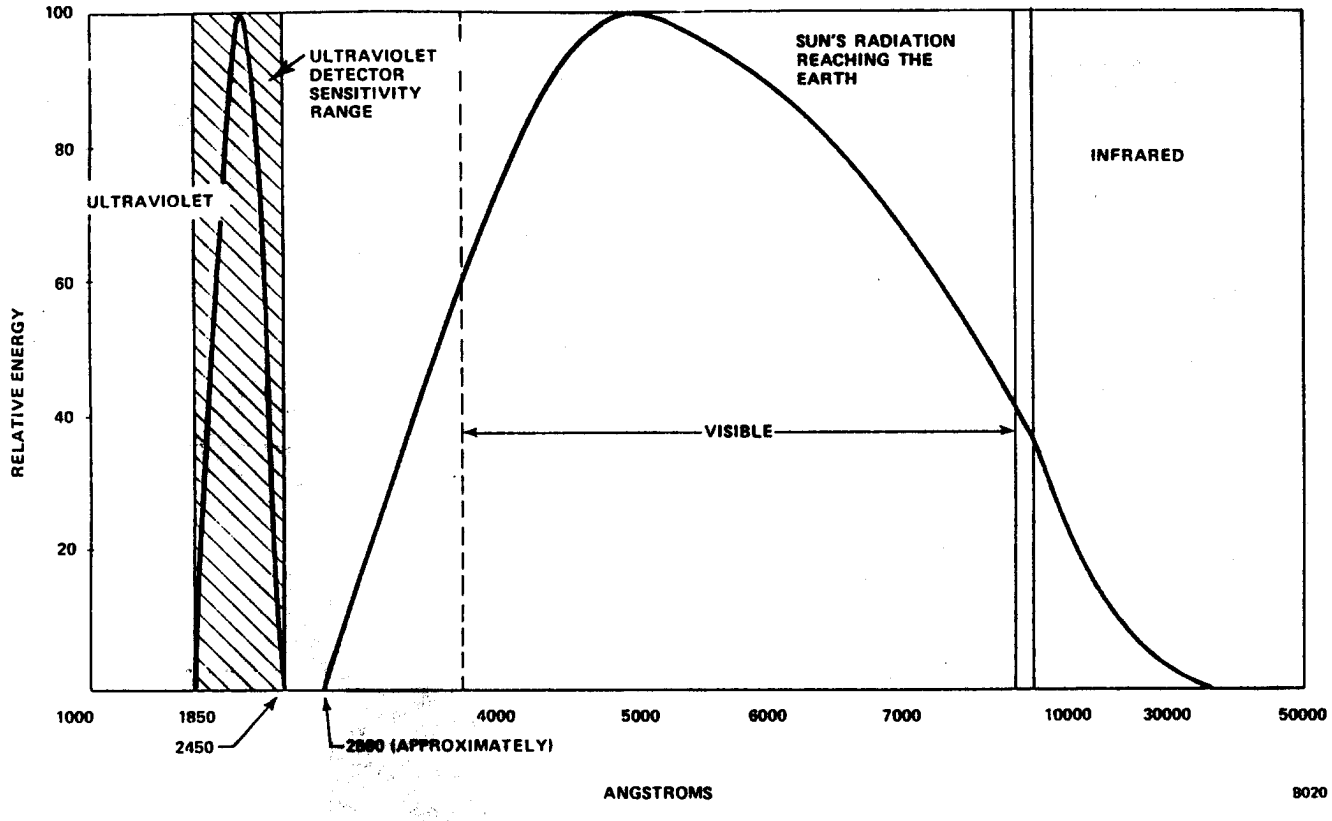


Figure 1–UV Detector's Range of Sensitivity

DIMENSIONS -
Figure 4 illustrates the mounting dimensions of the detector.

DETECTOR ENCLOSURE MATERIALS–
Models are available in anodized copper-free aluminum, nickel-plated brass, or 316 stainless steel. The aluminum and brass housings are epoxy coated, making them suitable for use in high saline atmospheres, such as offshore platforms.

DETECTOR ENCLOSURE RATINGS–
Watertight, dust-tight, designed to meet NEMA standards Publication ICS6-110.15-1978 for Type 4 enclosures. CSA certified Enclosure 4.

Hazardous locations - FM approved for Class I, Groups B, C, and D; Class II, Groups E, F, and G. CSA certified for Class I, Groups C and D; Class II, Groups E, F, and G. BASEEFA certified for Group Ex d IIc T6 (hydrogen). PTB approved for Ex Sd2 G5. CENELEC certified EEx d IIB T6. Certified by Lloyd's Register of Shipping to meet their minimum test requirements.

TEMPERATURE RATING–
Operating: -40 C to +77 C (-40 F to +170 F).
Storage: -55 C to +77 C (-67 F to +170 F).

Models with other temperature ratings are available. Contact Detector Electronics Corporation for details.

SHIPPING WEIGHT–

	Pounds	Kilograms
Aluminum	1.2	0.6
Stainless steel or brass	2.2	1.0

OPTIONS

- C7050A Detector without oi
- C7050B Detector with oi
- C7050C Front Mount Detector with oi
- C7050D Rear Mount Detector with oi
- C7050F Detector with integral cable, without oi
- C7050G Detector with integral cable, with oi
- C7050H Internal reflection detector without integral cable
- C7050J Internal reflection detector with integral cable
- C7050P Detector with air shield, with oi.

Integral Cable

The C7050 Detector is available with either internal or external conduit threads. Models with external conduit threads have a length of cable attached, with the leadwires connected to the terminal block and the entry sealed (C7050F, G, and J). The standard cable length is one meter, but it can be special ordered to any length. This

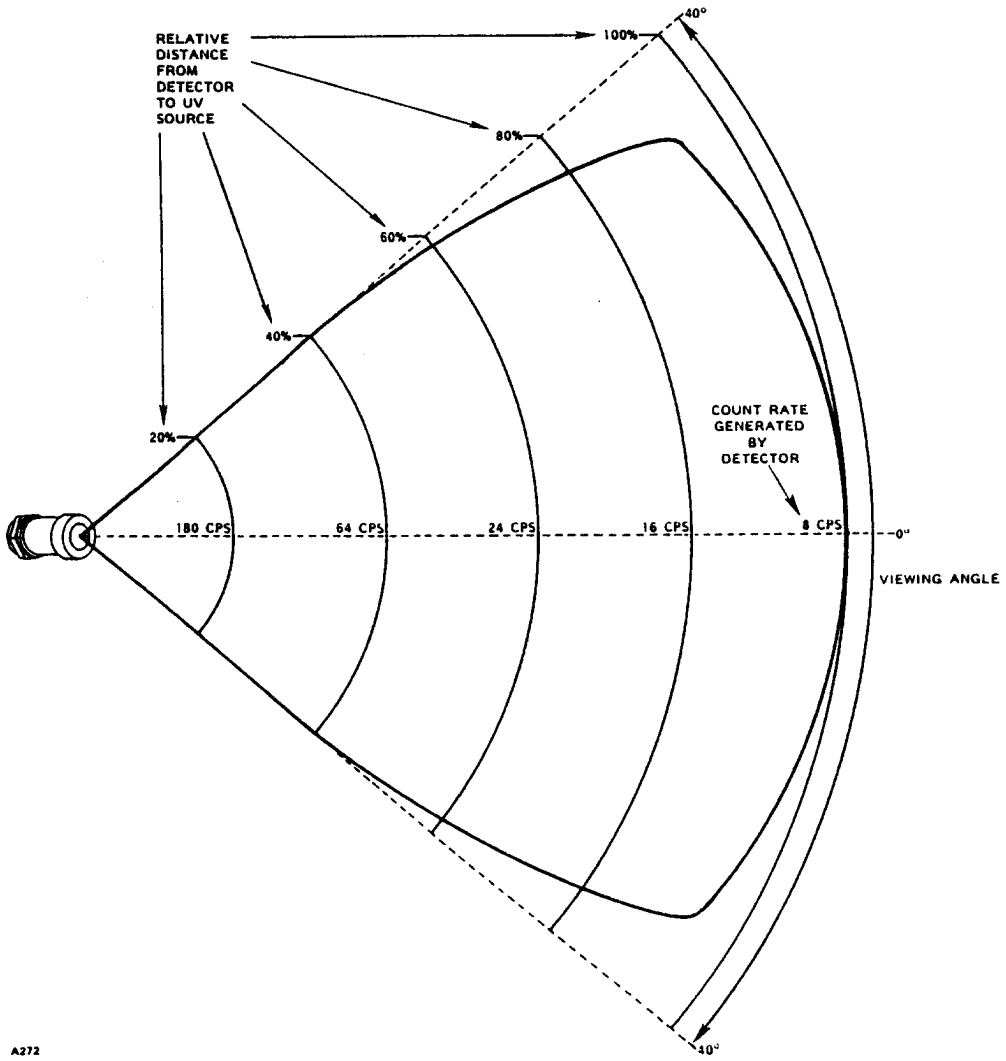


Figure 2—Detector Cone of Vision and Response to Constant UV Source

option provides a sealed assembly that prohibits moisture from entering the detector through the electrical entry. Contact Detector Electronics for specific information regarding the type of cable available.

Internal Reflection Oi

In applications where deterioration of reflective Oi rings caused by corrosive contaminants in the environment results in re-occurring faults, the use of an internal reflection Oi detector should reduce the resulting downtime and need for frequent window cleaning. Since the internal reflection detector checks the cleanliness of the quartz window without the use of an external reflective Oi ring, faults caused by corrosion or contamination on the ring are eliminated. A fault will be indicated only if the quartz window is actually dirty; however, the internal reflection system is able to detect only those substances that will wet the window. It does not detect dry contaminants and, therefore, is not practical for powder coating booths or similar applications where various dry contaminants can obscure the detector's vision.

ACCESSORIES

- Q9001B Swivel Mounting Assembly
- Q1101 Air Shield for use with C7050C
- Cover Locking Assembly to meet BASEEFA or PTB requirements.

INSTALLATION

Wiring Requirements

The wiring to each detector must be at least 22 gauge (0.643 mm diameter) with a minimum rating of 300 volts rms. Each detector should be located no more than 2000 feet (0.6 km) from the controller. The B-lead (detector output) must be shielded and the shield grounded **only** at the controller. If the B-lead is run in conduit, the conduit must not be used for wiring from other electrical equipment. An external grounding screw is provided on the terminal cap for applications where the local wiring

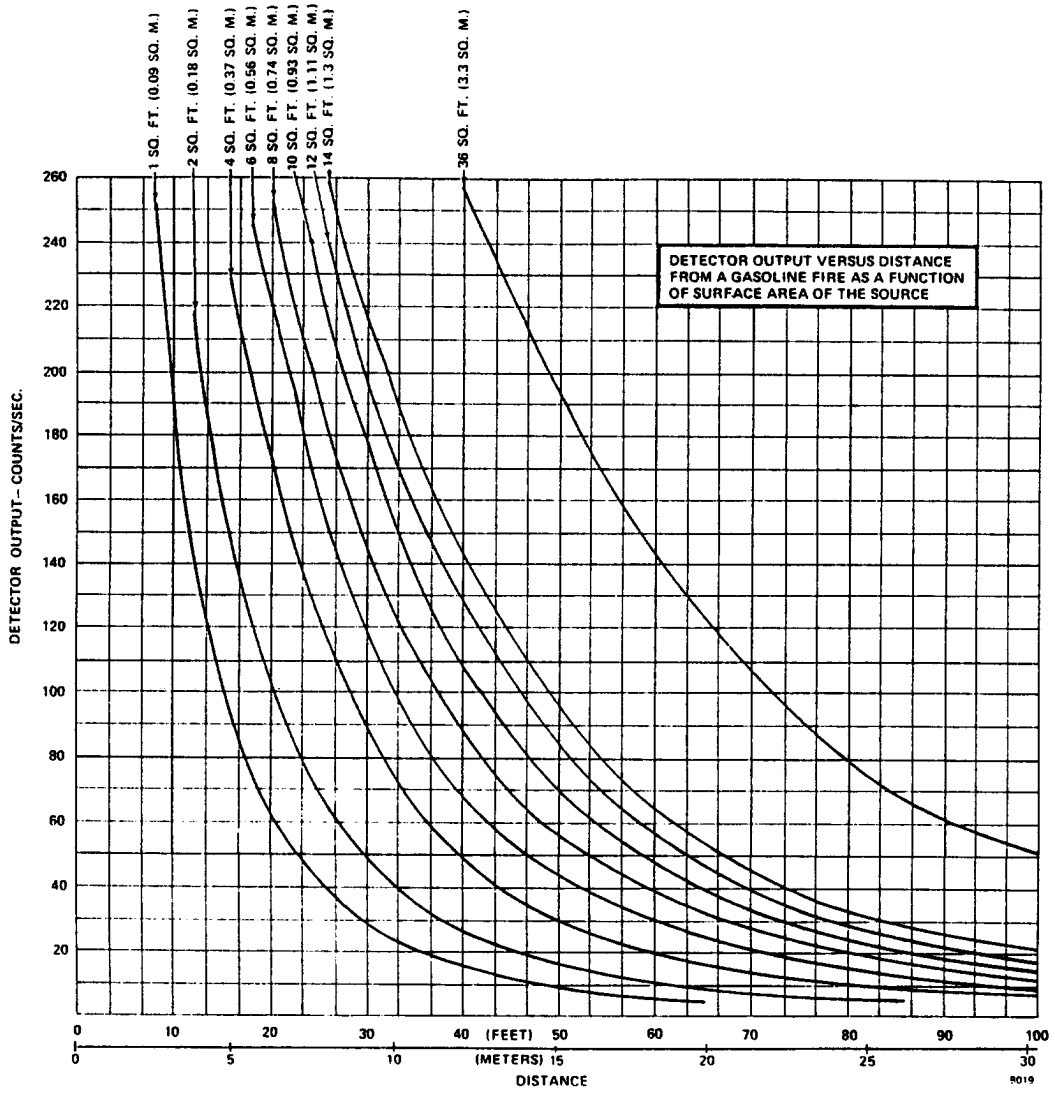


Figure 3–Sensitivity to a Gasoline Reference Fire

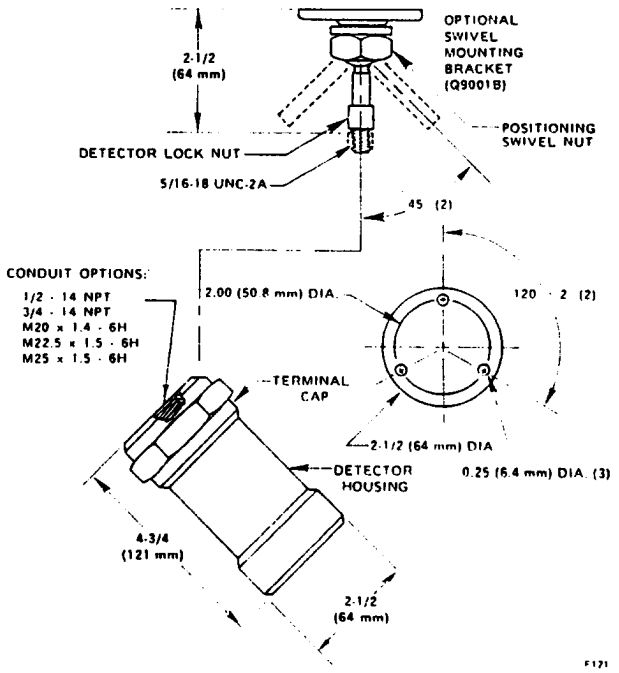


Figure 4–Dimensions of the C7050 Detector in Inches (Millimeters)

code or interference caused by static electricity requires that the detector enclosure be connected to earth ground. See controller manual for more information.

Cable made specifically for harsh, salt-water environments must be used in areas where high humidity or salt water is a problem. In all cases, typical cable insulation resistance should be 100 megohms or more, using a high voltage insulation tester, commonly known as a "megger" or megohmmeter. If the cable's resistance drops below 10 megohms, it should be replaced immediately to avoid shorting.

IMPORTANT

Remove detector and controller leads from the cable before applying megohmmeter to the cable.

Certain guidelines must be followed when installing the detector to maintain the explosion-proof, dust-proof, and moisture-proof qualities of its enclosure. In applications where rigid metal conduit is used to install the detector in a hazardous location, the use of water-tight conduit seals is required to prevent moisture from entering the

showing on the lower display, the upper display shows which detector and zone is electrically positioned for a manual **oi** test.

Voting Logic

The R7404 permits two groups of four zones each to "vote" separately, or eight zones to "vote" together. This means that the controller can be programmed to require more than one detector to be actuated before the Fire Logic A and/or B outputs are energized. The Det-Tronics "voting" principle allows combinations of detectors to fulfill voting requirements, and represents the best balance between reliability of fire detection and freedom from false actuation due to individual detector malfunction.

Fault Identification

The automatic fault identification feature of the R7404 operates much the same as on other Det-Tronics equipment, but has expanded capability. The lower display on the controller panel identifies the probable source or type of fault using a numerical code. A summary of the R7404 system status code is shown in Table 1.

System Reset

The reset function is incorporated in a rotary keylock switch, which has three positions: (1) NORMAL, (2) RESET and (3) TEST. The switch sequence is such that a return to NORMAL from the TEST position can be achieved only by passing through the RESET mode (see Figure 2). The reset function may also be performed by an optional external reset switch. Whenever the keylock switch is placed in the RESET or TEST position, the FAULT and INHIBIT LEDs will turn on, and all Zone, Fire Logic, and Alarm outputs will be disabled.

Table 1—System Status Codes

0 —	Keylock switch in RESET position, or external Inhibit/Reset is activated.
1 —	Keylock switch in TEST position.
2 —	Reduced detector sensitivity (**oi** fault), or faulty wiring.
3 —	Spurious UV detection or over sensitive detector.
4 —	Low +290 vdc (+290 volt detector supply wire may be shorted).
5 —	High +290 vdc (voltage regulation failure in the 290 volt supply).
6 —	Fire.
7 —	Not used.
8 —	Controller in count test mode.

Programming Switches

The circuit board on the left side of the R7404 Controller contains switches for selection of:

1. Detectors connected to the controller
2. System sensitivity
3. Time delay
4. Fire logic and latching/non-latching options.

See "Switch Setting Procedure" in the "Installation" section of this manual for a detailed description.

SPECIFICATIONS

SPECTRAL SENSITIVITY RANGE—
The detector responds to UV radiation over the range of 185 to 245 nanometers (1850 to 2450 angstroms).

CONE OF VISION—
The C7050 Detector has a nominal 90 degree cone of vision with the highest sensitivity along its central axis. See Figure 7.

SYSTEM SENSITIVITY—
Sensitivity for the standard R7404 Controller is field adjustable over a range of 8 through 120 counts per second (cps) in increments of 8 cps. The maximum response distance is achieved at an 8 cps sensitivity setting. For applications involving high background radiation potential, the system can be desensitized by increasing the count rate required to actuate it. The 120 cps setting results in the minimum response distance.

INPUT VOLTAGE—
The R7404 can operate from any voltage in the range of 10 to 38 volts dc.

TEMPERATURE RATING—
Standard detector: -40°F to +170°F (-40°C to +77°C).
Controller: -40°F to +158°F (-40°C to +70°C).

Detectors with higher temperature ratings are also available.

RESPONSE TIME—
Response to a saturating (high intensity) UV source is typically 10 milliseconds for the zone and alarm out-

puts and 150 milliseconds for the fire logic outputs when sensitivity is set for 8 cps and time delay is set for 0 seconds.

OUTPUT CIRCUIT RATINGS—
Open collector solid state output is rated 100 milliamperes dc at 60 volts dc. Lead monitoring is provided by an internal 100 kilohm resistor from output to ground. External equipment that can generate transients when switching (such as relays) must have a transient suppression device (diode) connected across the coil at the time of installation to safeguard the output transistors against possible damage. See the "Installation" section of this manual for details.

POWER CONSUMPTION (Controller and 16 Detectors)—
Standby: 1.5 watts typical, 1.7 watts maximum.
Fire: 15 watts typical, 16.5 watts maximum.

WIRING REQUIREMENTS—
The detector wiring must be a minimum of 22 gauge with a minimum voltage rating of 600 volts rms. (22 gauge copper wire has a diameter of 0.6439 mm or 0.02535 inch. Its cross section is 0.3255 mm^2 or 0.0005 in^2. Its resistance is 10.15 ohm/1000 ft. or 33.3 ohm/km.) The R7404 Controller will accommodate up to 16 detectors. The detectors can be located up to 2000 feet (600 meters) from the controller. Shielded cable is required for the "B" (signal) leadwires. As with any field device, shielded cable on all wires provides maximum protection from RFI/EMI sources.

SHIPPING WEIGHT (Approximate)—

	Pounds	Kilograms
Controller	2.5	1.12
Detector (aluminum)	1.25	0.56
(stainless steel or brass)	2.25	1.0

DIMENSIONS—
Refer to Figure 3 for dimensions of the controller and Figure 4 for the detector and swivel mounting brackets. Figure 5 shows the dimensions of the Q4004 Mounting Cage. Cages that hold fewer devices are also available.

DETECTOR ENCLOSURE MATERIALS—
Models are available in anodized copper-free aluminum, nickel-plated brass, or 316 stainless steel.

DETECTOR ENCLOSURE RATINGS (Model C7050B)—
Watertight, dust-tight NEMA 4 enclosure. FM approved for Class I, Groups B, C and D; Class II, Groups E, F and G. CSA certified for Class I, Groups C and D; Class II, Groups E, F and G. BASEEFA/CENELEC certified for Group EEx d IIb plus hydrogen T6.

DETECTOR SENSITIVITY

The UV flame detector responds to radiation over wavelengths of 185 to 245 nanometers (1850 to 2450 angstroms). Figure 6 illustrates the range of sensitivity, and compares this range to other forms of radiation. Note that UV radiation reaching the earth from the sun does not extend into the region of sensitivity of the detector. In addition, radiation from normal artificial lighting, such as fluorescent, mercury vapor, and incandescent lamps does not extend into the detector's spectral range. As a result, the detector is insensitive to these forms of radiation and may be used outdoors or indoors.

NOTE
Some mercury vapor lamps can operate for extended periods with cracked or otherwise damaged envelopes, and will then emit UV radi-

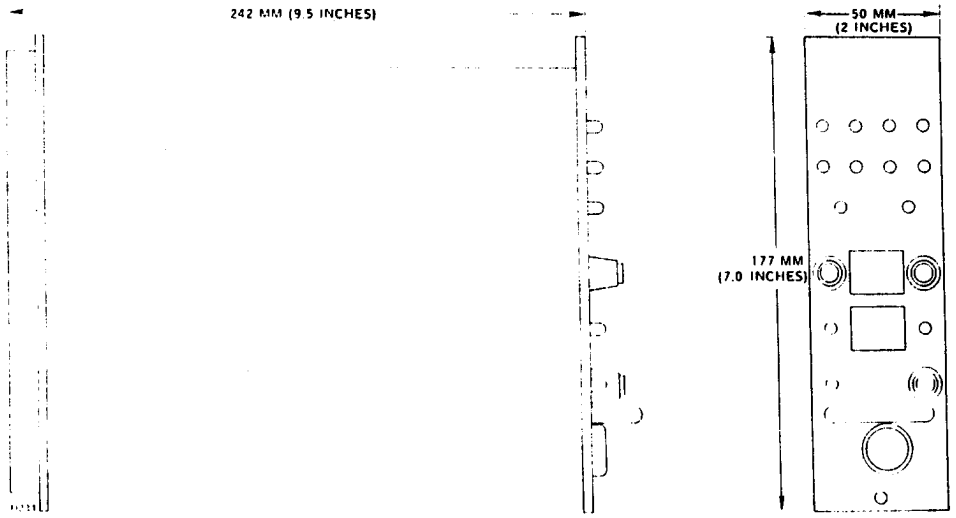


Figure 3—Controller Dimensions in Millimeters (Inches)

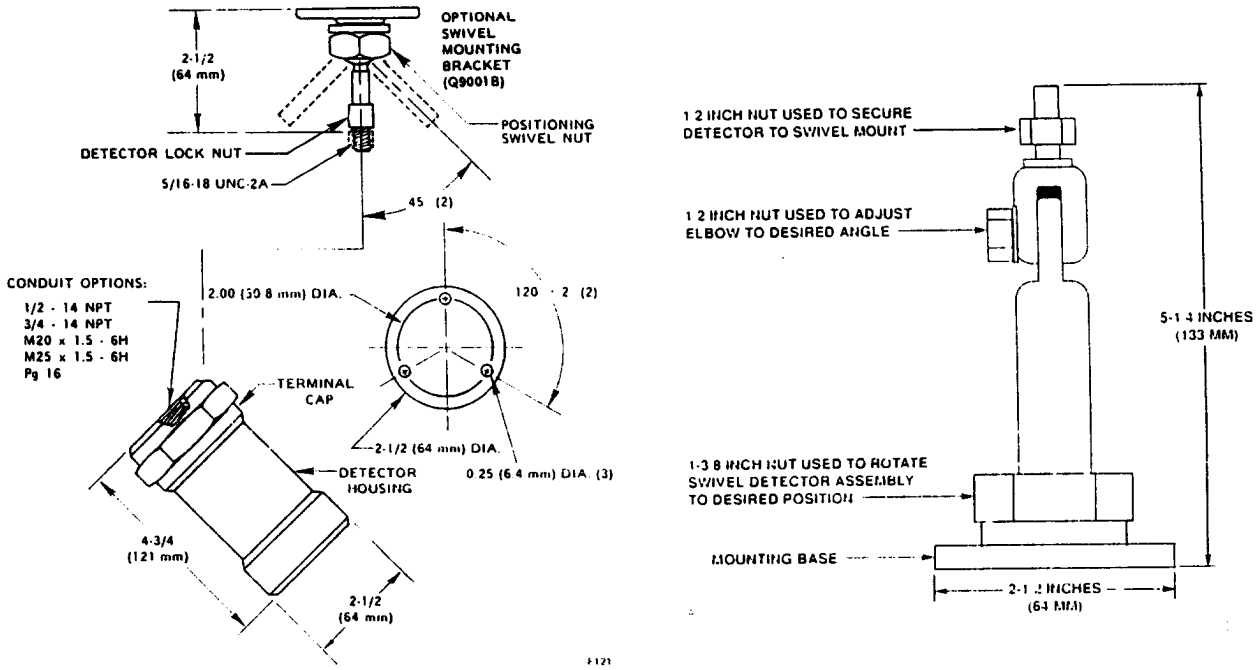


Figure 4—Detector Dimensions in Inches (Millimeters)

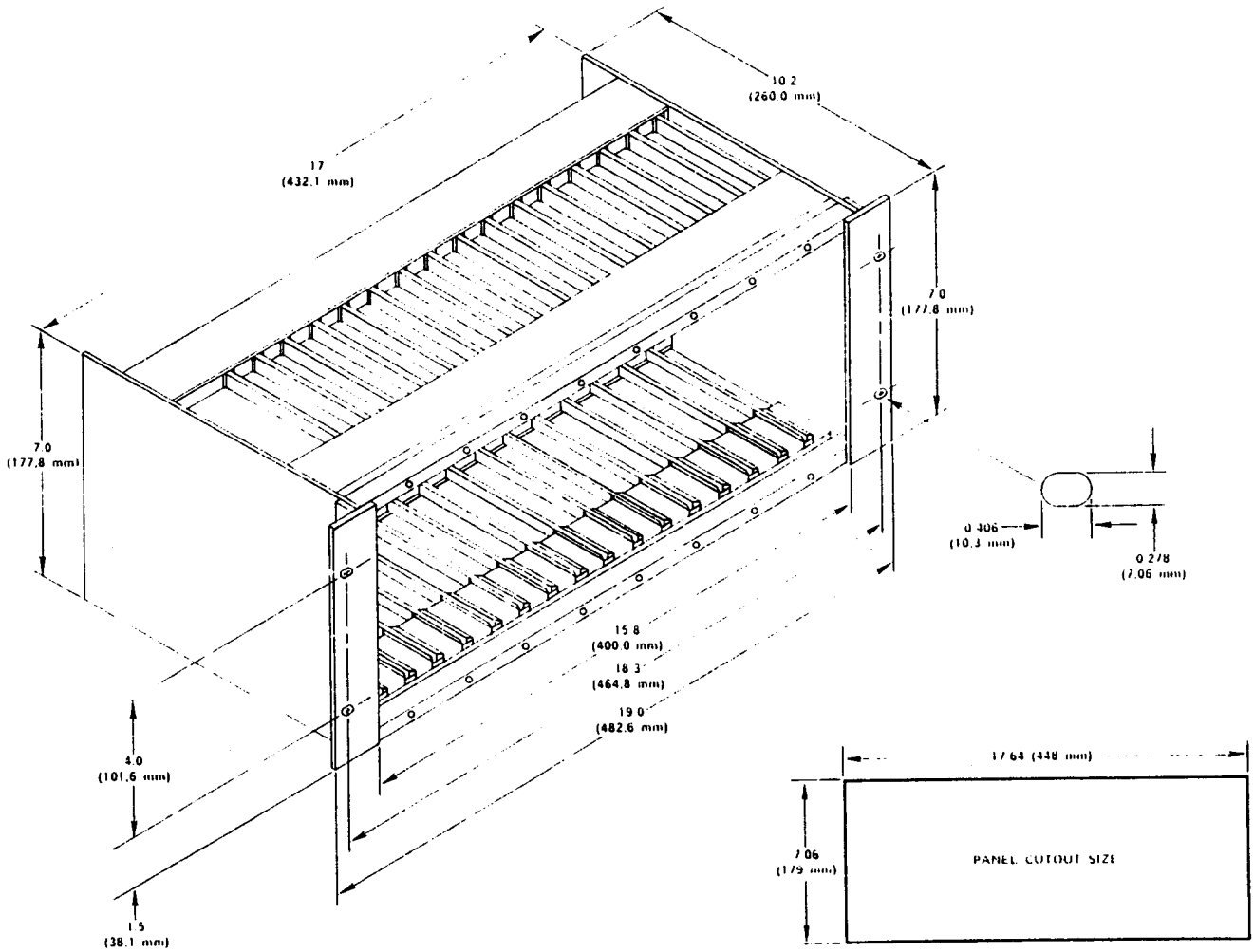


Figure 5—Q4004 Mounting Cage Dimensions in Inches (Millimeters)

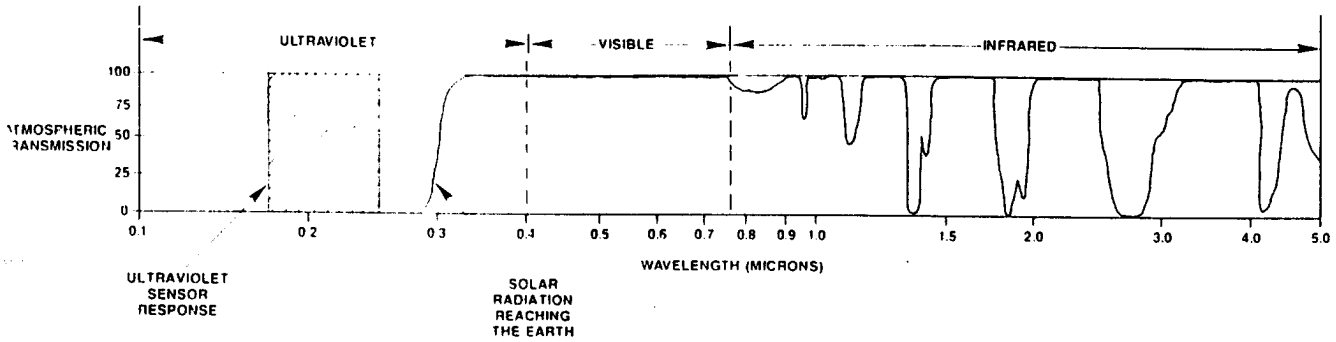


Figure 6—Detector Range of Sensitivity

ation in the frequency response range of the detector. Defective mercury vapor lamps should be immediately removed from service.

The UV sensor responds to any radiation that can penetrate its glass envelope and create ion pairs. The glass envelope absorbs most alpha or beta particles, but it permits both gamma and x-rays to pass through. If these rays create ion pairs between the electrodes near the cathode, the normal discharge process will occur and the detector will produce a count. If the x- or gamma ray flux is sufficient to produce a count rate higher than the system sensitivity setting, an undesired response of the system can occur.

Data on sensitivity of the C7050 Detector to various x-y and gamma radiation intensities is impossible to relate to a typical detector exposure. The normal precaution against false actuation due to x-rays or gamma radiation is to turn off the detection system when sources of high level radiation are being used in the immediate area. **Caution must be exercised** if the detection system is turned off, since the hazardous area will not be protected. If the application requires continuous supervision by the detection system, a "Nuclear Surveillance" system is needed. Refer to form number 95-8256 or contact Detector Electronics for complete information.

NOTE

Ultraviolet detectors are very sensitive to arc welding, and if this type of radiation can be expected, it must be controlled through proper application. Successful application techniques include careful positioning and shielding of the detectors. Some applications can require a "Remote Surveillance" or UV/IR system. Contact the Field Support Group at Detector Electronics for complete information.

Figure 7 shows a composite view of the cone of vision and the response of a typical detector to a constant UV source at various relative distances. Depending upon the intensity of the ultraviolet radiation source, the C7050 can be considered to have a practical application distance of up to about 50 feet (15 meters). Under certain controlled conditions, detectors can be used at greater distances.

SYSTEM SENSITIVITY CONSIDERATIONS

Figure 8 shows the relation between counts per second (cps) and distance. From this curve it can be seen, for example, that a 4 ft^2 (0.37 m^2) gasoline fire at 60 feet (18 meters) will normally cause the detector to generate 20 cps. The same fire at 40 feet (12 meters) will generate about 50 cps. If a 2 ft^2 (0.18 m^2) fire at 20 feet (6 meters) will generate about 100 cps, the same fire at 70 feet (21 meters) will generate about 8 cps. Because of the complexity of the combustion process, the UV tube count rate generated by different size fires viewed from the same distance is difficult to predict with a high degree of precision. In general, however, if a fire doubles in size, the tube count rate is increased by approximately 60 percent.

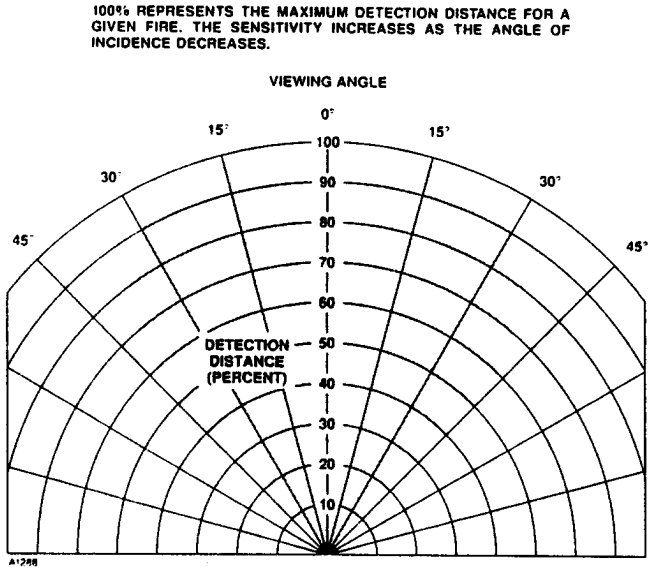


Figure 7—Detector Cone of Vision

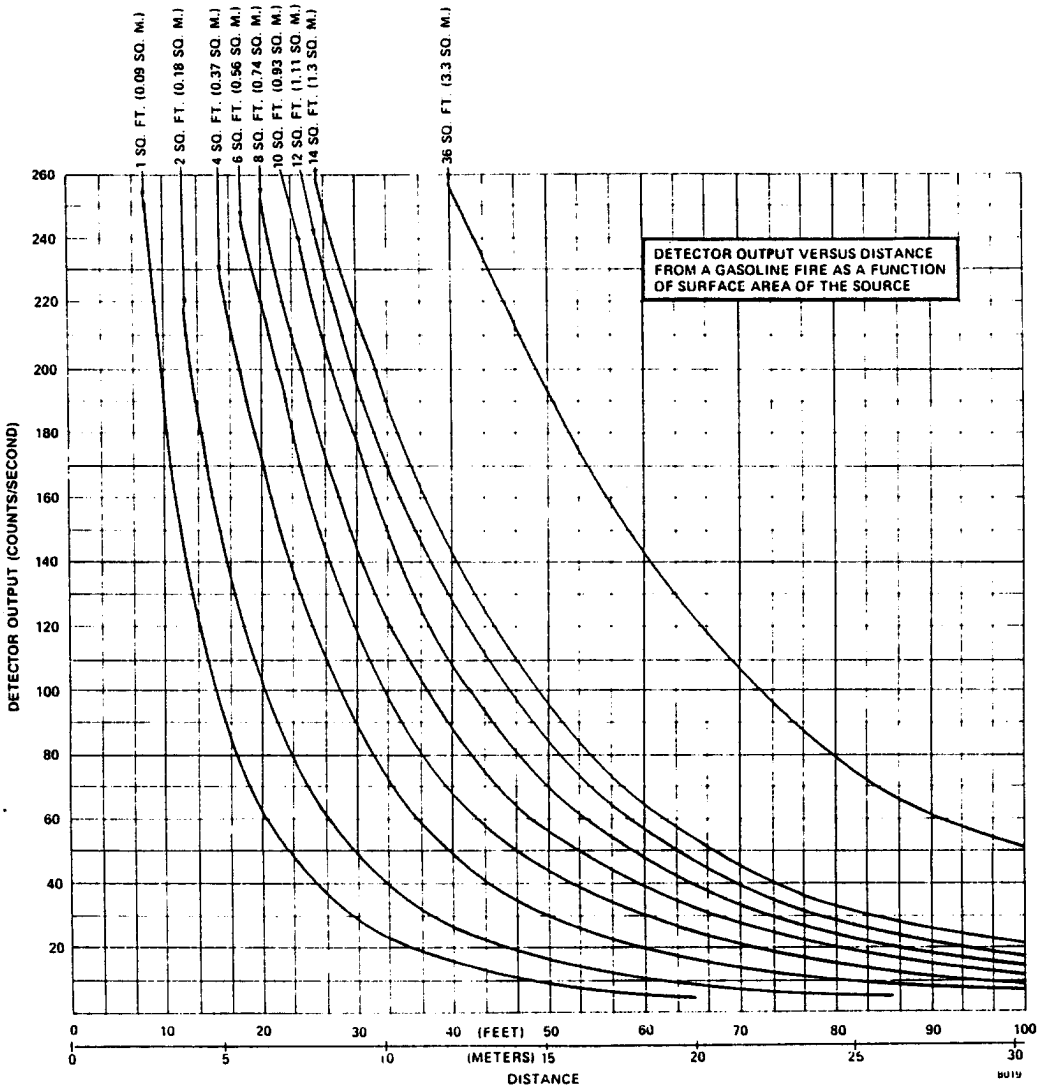


Figure 8—Sensitivity of a Typical Detector to a Gasoline Reference Fire

NOTE

The count rate of any given detector will depend upon the sensitivity of the sensor tube, the type and amount of fuel, the distance between the detector and the fire, as well as various other factors. Figure 8 illustrates the relative response of a "typical" C7050 to various size gasoline fires based on minimum sensitivity standards for DE1888 UV sensor modules. Sensor modules with higher sensitivity are available. Consult the Field Support Group at Detector Electronics for information or assistance concerning a specific detector tube type or a specific combustible material.

Selection of controller sensitivity and time delay to be used in a given application is dependent on the level of hazard present and the action to be taken in the event of fire. The adjustable sensitivity and time delay of the R7404 allows it to meet the requirements of virtually any application.

The system can be adjusted to various sensitivity levels by programming the controller to respond at a pre-determined detector tube count rate. This count rate is dependent upon the intensity of the ultraviolet radiation reaching the detector, which is a function of fuel, flame size, distance from the detector, and the amount of UV absorbing vapors that may be present.

Programming the controller to respond to a low count rate results in high system sensitivity. Conversely, programming the controller to require a high count rate results in low system sensitivity. The presence of UV absorbing vapors must be examined closely. Some chemical and petrochemical vapors have very strong UV absorption characteristics. See Table 2.

Referring to Figure 8 and considering the conditions described above, the criteria for selecting a correct system sensitivity adjustment can be established. For example, assume that the hazard to be protected is at a distance of 23 feet (7 meters) from the detector.

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Sweden
Telephone 431-53002/53240
Telex 72008

Detector Electronics Europe S.r.l.
Via Trivulzio 30
20146 Milano
Italy
Telephone 02-4048641 or 4048642

ORDERING INFORMATION

When ordering, specify model, options and shipping mode. For assistance in ordering a system to fit your application, please contact:

Detector Electronics Corporation
Field Support Group
6901 West 110th Street
Minneapolis, Minnesota 55438 USA

Telephone (612) 941-5665
Telex 29-0562 or 6879043
Cable Detronics

CONTROLLER INSTRUCTION MANUALS

Controller Type	Instruction Manual Form Number
R7300A	95-8171
R7300B	95-8212
R7301A and B	95-8215
R7302	95-8219
R7303	95-8226
R7404	95-8242, 95-8249

Table 2—UV Absorbing Gases and Vapors

The following 38 substances exhibit significant UV absorption characteristics. These are also generally hazardous vapors. While generally of little consequence in small amounts, these gases can restrict UV detection if they are in the atmosphere in heavy concentrations. It should also be determined whether or not large amounts of these gases may be released as a result of a fire-causing occurrence.

Acetaldehyde	Methyl Methacrylate
Acetone	Alpha-Methylstyrene
Acrylonitrile	Naphthalene
Ethyl Acrylate	Nitroethane
Methyl Acrylate	Nitrobenzene
Ethanol	Nitromethane
Ammonia	1-Nitropropane
Aniline	2-Nitropropane
Benzene	2-Pentanone
1,3 Butadiene	Phenol
2—Butanone	Phenyl Clycide Ether
Butylamine	Pyridine
Chlorobenzene	Hydrogen Sulfide
1-Chloro-1-Nitropropane	Styrene
Chloroprene	Tetrachloroethylene
Cumene	Toluene
Cyclopentadiene	Trichloroethylene
O-Dichlorobenzene	Vinyl Toluene
P-Dichlorobenzene	Xylene

If UV-absorbing gases may be a factor in a given application, precautionary measures should be taken. Detectors can be placed closer to the potential hazard area, and/or the sensitivity of the detection system can be increased. Contact the factory for further details.

Substances such as methane, propane, butane, hexane, camphor and octane are not UV absorbing.

Assume that the hazard is gasoline and that it is desired to produce an alarm signal when a fire with a surface area of 1 square foot (0.09 m^2) develops. Reading on the horizontal "Distance" axis of Figure 8, locate the vertical line at approximately 23 feet (7 meters). Follow this line until it intersects the "1 square foot" curve. Note that this occurs at the horizontal line of about 50 counts per second on the vertical "Detector Output" axis. This means that the controller should be adjusted to 48 cps sensitivity in order to detect this size fire from 23 feet (7 meters). If the detectors were located 30 feet from the hazard, it can be seen that it would be necessary to use a more sensitive (lower cps) setting.

INSTALLATION

IMPORTANT

The installation procedure described in this manual is intended for wiring and programming the standard R7404 Controller used with the C7050B Detector. It is important to note that the R7404 Controller is available with various operating programs (EPROMs). This can affect the system programming and/or terminal configuration of the controller. Since the installation procedure and application instructions vary with each model, specific information is supplied in a separate manual that is specific to the equipment being installed. When installing any "special purpose" version of the R7404 Controller, always use the manual that is supplied with the controller in conjunction with this manual. If a conflict arises, follow the procedure in the manual for the specific equipment involved.

Device	***Manual Form Number***
R7404 with STAR Logic	*95-8294*
R7404 for Remote Surveillance System	*95-8249*
R7404 for Nuclear Surveillance System	*95-8256*

WIRING REQUIREMENTS

The wiring to the detector must be a shielded cable 22 gauge (0.643 mm diameter) minimum, with at least a 600 volt rms rating. If there are two detectors in a zone, they may share a cable. If the detector leads are run in conduit, the conduit must not be used for wiring from other electrical equipment. Detectors can be located up to 2000 feet (600 meters) from the controller.

Shielded cable is required for the "B" (signal) leadwires. As with any field device, shielded cable for all wires provides maximum protection from RFI/EMI sources. In applications where the wiring cable is installed in conduit, the conduit must not be used for wiring to other electrical equipment.

Since moisture can be detrimental to electronic devices, it is important that moisture not be allowed to come in contact with the electrical connections of the system. Moisture in the air can be trapped within sections of conduit, therefore the use of conduit seals is required to prevent damage to electrical connections caused by condensation within the conduit. These seals must be water-tight and explosion-proof and are to be installed even if they are not required by local wiring codes. A seal must be located as close

V. Appendices

- Appendix 1 - Calculations/Formulas
- Appendix 2 - Lighting System Design Information
- Appendix 3 - Cost Estimates/Energy Cost Development
- Appendix 4 - Scope of Work
- Appendix 5 - Field Data Forms
- Appendix 6 - Drawings - Existing/Upgrade
- Appendix 7 - Drawings - Proposed Alternate 6
- Appendix 8 - Telephone Conversations
- Appendix 9 - Entry/Exit Interviews
- Appendix 10 - Response to Review Comments on the Interim Submittal

Appendix 1 - Calculations/Formulas

Milan Ammunition Plant Limited Energy Study

Alt 1/Baseline

	Existing Fixtures												Upgrade Fixtures					Baseline Total							
Room No.	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	16	9-0	C	36	639	59	200	3.20	$160	$0	$227	I200	7	200	1.40	$4,961	I200	23	48	52	7,987	3,494	11,482	$5,347
{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}	{9}	{10}	{11}	{12}	{13}	{14}	{15}	{16}	{17}	{18}	{19}	{20}	{21}	{22}	{23}	{24}	{25}	{26}

Alt 2

	Baseline Fixtures							Proposed Fixtures						Comparision					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	23	C	639	59	200	4.60	$5,347	MH70	16		89	1.42	$8,812	48	52	11,482	3,554	7,927	($3,465)
{27}	{28}	{29}	{30}	{31}	{32}	{33}	{34}	{35}	{36}	{37}	{38}	{39}	{40}	{41}	{42}	{43}	{44}	{45}	{46}	{47}

Alt 3

	Baseline Fixtures							Proposed Fixtures						Comparision					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	23	C	639	59	200	4.60	$5,347	HP70	16		99	1.58	$9,871	48	52	11,482	3,954	7,528	($4,524)
									{48}											

Alt 4

	Baseline Fixtures							Proposed Fixtures						Comparision					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	23	C	639	59	200	4.60	$5,347	MH70	16		89	1.42	$8,812	48	52	11,482	3,554	7,927	($3,465)
									{49}											

Alt 5

	Baseline Fixtures							Proposed Fixtures						Comparision					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	23	C	639	59	200	4.60	$5,347	HP70	16		99	1.58	$9,871	48	52	11,482	3,954	7,528	($4,524)
									{50}											

Alt 6

	Baseline Fixtures							Proposed Fixtures						Comparision					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	23	C	639	59	200	4.60	$5,347	HP50	16		58	0.93	$9,653	48	52	11,482	2,316	9,165	($4,306)
									{51}											

Loc B - Belt Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Milan Ammunition Plant Limited Energy Study
Alt 1/Baseline

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	23	C	43	25	1075	3.80	30%	30%	20%	0.319	1	3400	78200	0.86	20.06
{52}	{53}	{54}	{55}	{56}	{57}	{58}	{59}	{60}	{61}	{62}	{63}	{64}	{65}	{66}	{67}	{68}

Alt 2

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	16	C	43	25	1075	3.80	30%	30%	20%	0.276	1	4000	64000	0.90	14.82
{69}	{70}	{71}	{72}	{73}	{74}	{75}	{76}	{77}	{78}	{79}	{80}	{81}	{82}	{83}	{84}	{85}

Alt 3

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	16	C	43	25	1075	3.80	30%	30%	20%	0.435	1	5450	87200	0.94	33.20
	{86}															

Alt 4

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	16	C	43	25	1075	3.80	30%	30%	20%	0.276	1	4000	64000	0.90	14.82
	{87}															

Alt 5

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	16	C	43	25	1075	3.80	30%	30%	20%	0.435	1	5450	87200	0.94	33.20
	{88}															

Alt 6

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	16	C	43	25	1075	3.80	30%	30%	20%	0.435	1	3600	57600	0.94	21.93
	{89}															

Milan Ammunition Plant Limited Energy Study
Alt 1/Baseline

Loc B - Belt Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	23	C	2496	1	700	82.0	$2,107	0.0	$0	7.7	$121	$2,227
{90}	{91}	{92}	{93}	{94}	{95}	{96}	{97}	{98}	{99}	{100}	{101}	{102}	{103}

Alt 2

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	16	C	2496	1	5250	7.6	$692	0.3	$58	5.3	$140	$889	$1,338
{104}	{105}	{106}	{107}	{108}	{109}	{110}	{111}	{112}	{113}	{114}	{115}	{116}	{117}	{118}

Alt 3

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	16	C	2496	1	16800	2.4	$156	0.3	$60	5.3	$140	$355	$1,872
	{119}													

Alt 4

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	16	C	2496	1	5250	7.6	$692	0.3	$58	5.3	$140	$889	$1,338
	{120}													

Alt 5

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	16	C	2496	1	16800	2.4	$156	0.3	$60	5.3	$140	$355	$1,872
	{121}													

Alt 6

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	16	C	2496	1	16800	2.4	$165	0.3	$58	5.3	$140	$363	$1,865
	{122}													

Alternate 1/Baseline--A spreadsheet was developed to examine existing conditions and implement the necessary upgrade to obtain a baseline against which the alternates would be evaluated. A brief explanation of each heading, the source of the information (calculated, field verified, etc.) and the calculation necessary to determine the information. The columns and their explanations are as follows:

{1} Room No.: Input data, determined by arbitrarily subdividing areas into actual or imaginary rooms so calculations may be performed by the RCR method, and foot candles values assigned to certain areas.

{2} Existing Fixtures, Type: Input data, determined by field observations. These fixture types are represented as abbreviations. These abbreviations are explained on Table 6 in the Detailed Narrative of this report. Related to the fixture type are fixture wattage and fixture load.

{3} Existing Fixture, Quantity: Input data, determined by field observations.

{4} Existing Fixtures, Mounting Height: Input data, determined by field observations and by a general assumption per type or area of installation. These assumptions are listed on a Table 7 in the Detailed Narrative of this report.

{5} Existing Fixtures, LOC: Input data, determined by field observations and cataloged by area of installation as described on Table 7 of this report.

{6} Existing Fixtures, Working Height: Input data, determined by field observations to be approximately 36 inches for the height of a belt, and assumed to be 36 inches elsewhere. This number will give us a means of calculating light at a uniform height.

{7} Existing Fixtures, Light Level (Lux): Input data, determined by field measurements with a light meter. These values were measured with an Extech light meter adapted to a Fluke 8060 A digital multimeter. This meter was calibrated prior to the site visit and documentation for this calibration is attached.

{8} Existing Fixtures, Light Level (F.C.): Output data, determined by converting the Light Level (lux) to (fc) by dividing by a constant (10.76).

{9} Existing Fixtures, Fixture Wattage (W): Lookup data, determined by type of fixture. This value is the lamp and ballast wattage for the particular fixture, combined. These lookup values are listed in Table 6 as actual watts.

{10} Existing Fixtures, Fixture Load (kW): Output data, determined by the fixture wattage in {9} and the quantity of fixtures in {3}, given in kilowatts.

$$\{10\} = \{3\} \times \{9\} / 1{,}000$$

{11} Existing Fixtures Relamp Cost: Lookup data, determined by type of fixture. This value is the quantity of fixtures times the value calculated on our Cost Estimate Analysis for "Lamp Cost" and includes the material and labor costs necessary to install new lamps and clean the existing fixtures.

{12} Existing Fixtures, Reballast Cost: Lookup data, determined by type of fixture for a particular "Ballast Cost" which is calculated from the quantity of fixtures times the value calculated on our cost estimate analysis for "Ballast Cost" which includes the material and labor costs necessary to install new ballasts in the existing fixtures. Note, however, that we then divide the result of the above calculation by 20. In effect, this calculation means that only one fixture out of 20 needs a new ballast. From our field observations, this assumption appears valid.

{13} Existing Fixtures, Replace Fixture: Lookup data determined by type of fixture for a particular "fixture cost" which is calculated from the quantity of fixtures times the value calculated on our cost estimate analysis for "Fixture Costs" which includes the material and labor costs necessary to install new fixtures. Note, however, that we then divide the result of the above calculation by 50. In effect this calculation means that only one fixture out of 50 needs to be replaced. From our field observations, this assumption appears valid.

{14} Upgrade Fixtures, Type: This information is obtained from the input data at {2}. This fixture type is the same type as is presently existing. This information relates to the type of fixtures which should be added to improve, or upgrade, the existing conditions.

{15} Upgrade Fixtures, Quantity: This information is determined by quantity of existing fixtures times 40 percent raised to the next integer. We raise the calculated number to the next integer because we cannot have a fraction of a fixture. (We need either 2 or 3 fixtures, not 2.5 fixtures). A discussion on why 40 percent was chosen is in the narrative section of this volume under Alternate 1 (upgrade/existing).

{16} Upgrade Fixtures, Fixture Wattage (W): Lookup data, determined by type of fixture in {14}. This value is used to help determine the overall load in {17} required by the upgrade.

{17} Upgrade Fixtures, Fixture Load (kW): Output data, determined by the fixture wattage in {16} and the quantity of fixtures in {15}, given in kilowatts:

$$\{17\} = \{15\} \times \{16\} / 1{,}000$$

{18} Upgrade Fixtures, New Fixture Cost: Output data, determined by "Fixture Cost" associated with fixture type times quantity {15} "Fixture Cost" was calculated in our cost estimate analysis and includes the material and labor costs necessary to install a new fixture.

{19} Baseline Total, Type: This information is obtained from the input data at {2} and is the same as {14}.

{20} Baseline Total, Quantity: This quantity is the total number of fixtures as determined by adding {3} (existing) and {15} (new).

{21} Baseline Total, Hours/Week: This information reflects the number of hours per week that the lights will be turned on and is input data. Rationale to explain why we used 48 hours is under the Energy Consumption Calculations section of the Detailed Narrative in this report.

{22} Baseline Total, Weeks/Year: This number reflects the number of weeks per year that the fixtures will be turned on. While the fixtures may not be turned on an actual 52 weeks/year, the average number of weeks is assumed to be 52 due to an average of 48 hours/week to compensate for overtime and shift work. These concepts are further

explained under the section "Energy Consumption Calculations" in the Detailed Narrative.

{23} Baseline Total, Existing Power: (kWh) This quantity is the power consumed by the existing fixtures. This value is calculated by multiplying the quantity {3} by the fixture wattage {9} by the hours/week {21} by the weeks per year {22} and dividing by 1000.

{24} Baseline Total Upgrade Power (kWh): This quantity is the power consumed by the proposed upgrade fixtures. This value is calculated similar to {23} above.

$$\{24\} = \{15\} \times \{16\} \times \{21\} \times \{22\} / 1{,}000$$

{25} Baseline Total, Total Power: (kWh) This quantity is the sum of the existing and upgrade power consumption.

$$\{25\} = \{23\} + \{24\}$$

{26} Baseline Total, Total Baseline Cost: This cost is the total cost necessary to relamp {11}, reballast {12}, and replace existing fixtures {13} and to provide additional lighting fixtures {18}.

$$\{26\} = \{11\} + \{12\} + \{13\} + \{18\}$$

Alternate 2

A spreadsheet was developed to examine a proposed alternate lighting system against the baseline/upgrade system described above (Alternate 1/Baseline).

The numbered items and their explanations are as follows:

{27} Room No.: Corresponds to {1}.

{28} Baseline Fixtures, Type: Corresponds to {2}.

{29} Baseline Fixtures, Quantity: Corresponds to {20}; represents existing plus upgrade quantity.

{30} Baseline Fixtures, Location: Corresponds to {5}.

{31} Baseline Fixtures, Light Level (lx): Corresponds to {7}.

{32} Baseline Fixtures, Light Level (fc): Corresponds to {8}.

{33} Baseline Fixtures, Fixture Wattage: Corresponds to {9}.

{34} Baseline Fixture, Fixture Load (kW): Corresponds to baseline quantity {29} times baseline fixture wattage {33}.

$$\{34\} = \{29\} \times \{33\}$$

{35} Baseline Fixtures, Total Baseline Cost: Corresponds to {26}.

{36} Proposed Fixtures, Type: Lookup data, determined by type and location of fixture and requirements of this alternate. Alternate 2 replaces all incandescents, fluorescents, HID's etc. per description under Detailed Narrative, this report.

{37} Proposed Fixtures, Quantity: Corresponds to {3}.

{38} Proposed Fixtures, Light Level (fc): This category is intentionally blank to remind the reader to go to another spreadsheet for a calculation of light output (in footcandles) as obtained under assumptions explained in the Detailed Narrative.

{39} Proposed Fixtures, Fixture Wattage (W): Lookup data, determined by type of proposed fixture {36}. Values relate to Table 6, Detailed Narrative.

{40} Proposed Fixtures, Fixture Load: Output data, determined by the fixture wattage {39} and the quantity of fixtures {37}, given in kilowatts.

$$\{40\} = \{37\} \times \{39\} / 1{,}000$$

{41} Proposed Fixtures, New Fixture Cost: ($) Output data, determined by "Fixture Cost" associated with fixture type times quantity {37}. Fixture cost was calculated in our cost

estimate analysis and includes the material and labor costs necessary to install a new fixture.

{42} Comparison, Hours/Week: Input data, corresponds to {21}, in this analysis.

{43} Comparison, Weeks/Year: Input data, corresponds to {22}, in this analysis.

{44} Comparison, Baseline Power (kWh): Output data, calculated by multiplying the quantity of baseline fixtures {29} times fixture wattage {33} times hours/week {42} times weeks/year {43} divided by 1000 to get kilowatt hours.

$$\{44\} = \{29\} \times \{33\} \times \{42\} \times \{43\} / 1{,}000$$

{45} Comparison, Proposed Power (kWh): Output data, calculated by multiplying quantity of proposed fixtures {37} times fixture wattage {39} times hours/week {42} times weeks/year {43} and divided by 1,000 to get kilowatt hours

$$\{45\} = \{37\} \times \{39\} \times \{42\} \times \{43\} / 1{,}000$$

{46} Comparison, Delta Power (kWh): Output data, calculated as the difference in power of the baseline system {44} versus the proposed alternate system {45}.

$$\{46\} = \{44\} - \{45\}$$

{47} Comparison, Delta Fixture Cost ($): Output data, calculated as the difference in fixture costs of the baseline system {35} versus the proposed alternate system {41}.

$$\{47\} = \{35\} - \{41\}$$

A result in parenthesis ( ) here indicates a negative number; that is, the proposed system's cost is greater than the baseline system.

Alternate 3 - Alternate 6

{48 - 51} Alternates 3 through 6 have spreadsheets which were developed just like Alternate 2 except for items {48} (Alternates 3), {49} (Alternates 4), {50} (Alternate 5), and

{51} (Alternate 6) which are alternate types of proposed fixtures under consideration to replace item {36} (Alternate 2). A more detailed description for these alternate concepts can be found in the Detailed Narrative, this Volume.

The next spreadsheets are used to calculate lighting levels as determined by the RCR method. The method is discussed in the Detailed Narrative and further documented under the miscellaneous data section of this Volume.

For these spreadsheets we have the following explanations of their associated columns:

Alternate 1/Baseline

{52} Room Number: Corresponds to {1} above.

{53} Type: Corresponds to {19} above.

{54} Quantity: Corresponds to {20} above.

{55} Location: Corresponds to {5} above.

{56} Room Data, Length (ft): Input data, based upon the particular room in question {52}. These room lengths are scaled from the drawings as accurately as possible.

{57} Room Data, Width (ft): Input data, based upon the particular room in question {52}. These room widths are scaled from the drawings or assumed to be 8 feet for belts (B) and ramps (R).

{58} Room Data, Area (sf): Output data, calculated from room length {56} times room width {57}.

$$\{58\} = \{56\} \times \{57\}$$

{59} Room Data, Room Cavity Ratio (RCR): These values are calculated based upon fixtures being assumed to be located at an average of 15 ft high for building (C) lights or 8 ft high for all other (B, R, L) lights. This calculation also assumes a working height of 3 feet above the floor. These items are discussed in the Light

Output Calculations section of this report. The Miscellaneous Data section also presents the theory associated with these calculations.

Location C,

$$\{59\} = 5 \times [(15 - 3) \times \frac{\{56\} + \{57\}}{\{56\} \times \{57\}}$$

Location B, R, and L

$$\{59\} = 5 \times (8 - 3) \times \frac{\{56\} + \{57\}}{\{56\} \times \{57\}}$$

{60} Reflectance, % Ceiling: Input data, this value represents the amount of light reflectance that can be expected off the ceiling of these facilities. The ceilings are open and painted black with exposed joints and trusses, so this number is a low value (30%).

{61} Reflectance, % Walls: Input data, this value represents the amount of light reflectance that can be expected off the walls of these facilities. The walls are red up to the first 2-1/2 feet, then white up to 9 feet, and then black above that. Some of the rooms were too large to analyze effectively, so we added imaginary walls to divide them. Because the imaginary walls have no real reflectance, the actual % wall reflectance (% w) had to be lowered. We chose 30% reflectance as an acceptable value. For belt (B) lights, all walls are imaginary and the % wall reflectance was therefore reduced to 10%.

{62} Reflectance, % Floors: Input data, this value represents the amount of light reflectance that can be expected off the floors of these facilities. The floors are red, due to an anti-static coating used on them, so this number is a low values (30%).

{63} Fixture Data, Coefficient of Utilization (CU): Lookup data, this value represents the amount of light that can be used in a room from a fixture and is dependant upon characteristics of the particular type of fixture {53} and upon the RCR {59}, the ceiling reflectance {60}, the wall reflectance {61}, and the floor reflectance {62}.

{64} Fixture Data, Lamps per Fixture: Lookup data, this value is used in the lighting calculations to quantify the amount of light output available from the fixture's lamps. The number corresponds to the number of lamps in the specific fixture type {53}.

{65} Fixture Data, Lumens per Lamp: Lookup data, this value is used in combination with {64} to quantify available light output from the fixture. This number corresponds to the type of lamps used in specific fixture type {53}. These values are specific to the chosen lamp, and are listed in a table under the Light Output Calculations section of the Detailed Narrative.

{66} Fixture Data, Total Lumens: Calculated data, this value represents the amount of lumens available {65} from all of the lamps in a fixture {64} and all of the fixtures in a room {54}.

$$\{66\} = \{54\} \times \{64\} \times \{65\}$$

{67} Fixture Data, Light Loss Factor: Lookup data, this value reflects the amount of light that will be depreciated due to age of the lamps - Lamp Lumen Depreciation (LLD) and the amount that will be depreciated due to dirt upon the fixture, Lens Dirt Depreciation (LDD). These values are somewhat contingent upon the type of fixture, where it is located, the cleanliness of the environment, and whether group relamping takes place or not.

$$LLF = LLD \times LDD$$

{68} Footcandles: Output data, calculated from the fixture's coefficient of utilization.

$$\{68\} = \{63\} \times \{66\} \times \{67\} / \{59\}$$

Alternate 2

{69} Through {85} for Alternate 2 are similar to values {52} through {68} for Alternate 1. The major difference is in the type of fixture analyzed {70} and its resulting changes in fixture data {80} through {84} and finally, the resulting calculated footcandle value {85}.

{83} = {71} x {81} x {82}

{85} = {80} x {83} x {84} / 75

Alternate 3, 4, 5, & 6

Values obtained by looking up the type of fixtures required per the alternate examined:

{86} = {48}, Alternate 3

{87} = {49}, Alternate 4

{88} = {50}, Alternate 5

{89} = {51}, Alternate 6

And finally, we have spreadsheets on the maintenance cost of the baseline, Alternate 1 system and the maintenance savings as compared with the competing Alternate 2 through 6. First we will discuss the baseline costs in {90} through {103}.

{90} Room Number: Input data, corresponds to {1}.

{91} Type: Input data, corresponds to {19}.

{92} Quantity: Input data, corresponds to {20}.

{93} Location: Input data, corresponds to {5}.

{94} Operating Hours/Year: Calculated data, corresponds to baseline operating hours per week {21} and operating weeks per year {22}.

{94} = {21} x {22}

{95} Lamps per Fixture: Lookup data, corresponding to type of fixture {91}. Quantities of lamps per fixture are indicated in a table in the Detailed Narrative section of this report.

{96} Lamp Life (hours): Lookup data, corresponding to type of fixture {91}. Lamp life is indicated in a table in the Detailed Narrative section of this report.

{97} Yearly Relamping Count: Calculated data, corresponds to the quantity of fixture which require lamps to be changed due to burn-out. This number is calculated from the quantity of fixture {92} x operating hours/year {94} divided by the lamp life in hours {96}.

$$\{97\} = \{92\} \times \{94\} / \{96\}$$

{98} Yearly Relamping Cost: Calculated data, determined from the cost per lamp changeout for a fixture (this value is the same as {11} and is a lookup value determined from our cost estimate analysis for lamp costs) multiplied by the quantity of fixtures {97} which require lamps to be changed.

{99} Yearly Reballast Count: Calculated data, determined from the quantity of fixtures times 2 percent. Two percent ballast burn out is an assumed value, but it is based upon our observations of typical operating and maintenance requirements.

{100} Yearly Reballast Cost: Calculated data, determined from the quantity of fixtures which require a ballast change out {99} times the cost per changeout as obtained from a lookup table as determined from our cost estimate analysis for ballast costs.

{101} Yearly Cleaning Count: Calculated data, determined from the quantity of fixtures #92 divided by 3 years. Our assumption is that every 3 years all of the fixtures will receive a good cleaning. For this analysis, then, mathematically 1/3 of the overall fixture quantity is done every year.

{102} Yearly Cleaning Cost: Calculated data, determined from the quantity of fixtures which require cleaning #101 times the cost per cleaning as obtained from a lookup table as determined from our cost estimate analysis for lens cleaning cost.

{103} Total Maintenance Cost: Calculated data, determined from the yearly relamping cost {98} plus the yearly reballast cost {100} plus the yearly cleaning cost {102}.

Now we will discuss the alternate costs in {104} through {122}.

Alternate 2, Maintenance

{104} Savings Over Baseline Room No.: Same as {27}.

{105} Type: Input data, Same as {36}.

{106} Quantity: Input data, Same as {37}.

{107} Location: Input data, Same as {30}.

{108} Operating Hours per Year: Calculated data determined from comparison, hours/week {42} times comparison, weeks/year {43}.

{109} Lamps per Fixture: Lookup data, determined from type of fixture {105}.

{110} Lamp Life (hours): Lookup data, determined from type of fixture {105}.

{111} Yearly Relamping Count: Corresponds to {97}, for this alternate is the quantity {106} times the operating hours/year {108} divided by Lamp Life (hours) {100}.

$$\{111\} = \{106\} \times \{108\} / \{110\}$$

{112} Yearly Relamping Cost: Corresponds to {98}, it is a lookup value times yearly relamping count {111}.

{113} Yearly Reballast Count: Corresponds to {99}, it is calculated data determined from the quantity {106} times 2.0 percent.

$$\{113\} = \{106\} \times 0.02$$

{114} Yearly Reballast Cost: Corresponds to {100}, it is calculated data determined from the lookup value for ballast changeout times the quantity {113}.

{115} Yearly Cleaning Count: Corresponds to {101}, it is calculated data determined from the fixture quantity {106} divided by 3.0.

{116} Yearly Cleaning Cost: Corresponds to {102} it is a lookup value times the yearly cleaning count {115}.

{117} Total Maintenance Cost: Corresponds to {103}, it is calculated data determined from yearly Relamping Count {112} plus yearly reballast count {114} plus yearly cleaning cost {116}.

{117} = {112} + {114} + {116}

{118} Maintenance Savings Over Baseline: Is calculated data for the difference between maintenance costs of the baseline {103} versus the costs of this Alternate (No. 2) {117}.

{118} = {103} - {117}

Alternates 3, 4, 5, and 6

Values obtained by looking up the type of fixture required per each alternate examined (similar to {105}).

{119} = {48}, Alternate 3
{120} = {49}, Alternate 4
{121} = {50}, Alternate 5
{122} = {51}, Alternate 6

Life Cycle Cost Analysis (LCCID) Input Data

Excel spreadsheet data for Alternate 2 through 6 was used to create input data for the LCCID computer program via the following method:

Part 1 - Investment

Item A, construction cost, is the value for new fixture cost on our Excel spreadsheets. Item B, SIOH, is 5.5% of the construction cost; and Item C, Design Cost, is 6% of the construction cost.

Part 2 - Energy Savings/Cost

Under Item A, Electrical Fuel Savings (MWH/YR) is the value for delta power from the Excel spreadsheets. Item M, demand savings, is found by plugging in the values from the Excel spreadsheet into the following formula:

Demand Savings = 8.67 x 12 x (Fixture load baseline - fixture load Alternate #)

Part 3 - Non-energy Savings/Cost

Item A, Annual Recurring, this is the value for Maintenance Savings from the Excel spreadsheets. Item B1 is determined by using the following formula:

Baseline Diff = Total Baseline Cost + SIOH + Design Cost

The Baseline Difference is a non-energy / non-recurring savings. Due to the condition of the existing lighting system, alternate 1, the baseline upgrade must be performed to restore the system to acceptable IES lighting standards. Alternates 2-6 are compared to the upgraded baseline system in order to find energy savings at equal light levels. Since alternates 2-6 replace the existing system with a lighting system which meets IES standards, the baseline upgrade is not necessary, and its entire cost can be used as a first year savings.

LCCID Input Data - Package 1 - 5

Data from Packages 1 through 5 was entered into the LCCID computer program for synergism analysis via the following method:

Part 1 - Investment

The construction cost (1A) was determined by totalling the construction costs of the chosen alternates. These are found in the previous LCCID analyses. To find the SIOH, multiply the total construction cost by 5.5%.

Part 2 - Energy Savings

The electrical fuel savings are found in the Excel printout delta power savings by building. Enter the valves in Mwh, including decimals. LCCID will round the number for display purposes, but use the decimals for all calculations. Demand savings are the sum of alternates on previous LCCID analyses.

Part 3 - Non-Energy Savings

Annual recurring savings are found by adding the annual savings from alternates on previous LCCID analyses. Non recurring savings are the sum of non recurring savings from alternates on previous LCCID analyses. Enter this number under the title Baseline Diff. occurring in year zero.

Appendix 2 - Lighting System Design Information

Fig. 2-2. Currently Recommended Illuminance Categories and Illuminance Values for Lighting Design—Target Maintained Levels

The tabulation that follows is a consolidated listing of the Society's current illuminance recommendations. This listing is intended to guide the lighting designer in selecting an appropriate illuminance for design and evaluation of lighting systems.

Guidance is provided in two forms: (1), in Parts I, II and III as an *Illuminance Category*, representing a range of illuminances (see page 2-4 for a method of selecting a value within each illuminance range); and (2), in parts IV, V and VI as an *Illuminance Value*. Illuminance Categories are represented by letter designations A through I. Illuminance Values are given in *lux* with an approximate equivalence in *footcandles* and as such are intended as *target* (nominal) values with deviations expected. These target values also represent *maintained* values (see page 2-24).

This table has been divided into the six parts for ease of use. Part I provides a listing of both Illuminance Categories and Illuminance Values for generic types of interior activities and normally is to be used when Illuminance Categories for a specific Area/Activity cannot be found in parts II and III. Parts IV, V and VI provide target maintained Illuminance Values for outdoor facilities, sports and recreational areas, and transportation vehicles where special considerations apply as discussed on page 2-4.

In all cases the recommendations in this table are based on the assumption that the lighting will be properly designed to take into account the visual characteristics of the task. See the design information in the particular application sections in this Application Handbook for further recommendations.

I. Illuminance Categories and Illuminance Values for Generic Types of Activities in Interiors

Type of Activity	Illuminance Category	Ranges of Illuminances		Reference Work-Plane
		Lux	Footcandles	
Public spaces with dark surroundings	A	20-30-50	2-3-5	General lighting throughout spaces
Simple orientation for short temporary visits	B	50-75-100	5-7.5-10	
Working spaces where visual tasks are only occasionally performed	C	100-150-200	10-15-20	
Performance of visual tasks of high contrast or large size	D	200-300-500	20-30-50	
Performance of visual tasks of medium contrast or small size	E	500-750-1000	50-75-100	Illuminance on task
Performance of visual tasks of low contrast or very small size	F	1000-1500-2000	100-150-200	
Performance of visual tasks of low contrast and very small size over a prolonged period	G	2000-3000-5000	200-300-500	Illuminance on task, obtained by a combination of general and local (supplementary lighting)
Performance of very prolonged and exacting visual tasks	H	5000-7500-10000	500-750-1000	
Performance of very special visual tasks of extremely low contrast and small size	I	10000-15000-20000	1000-1500-2000	

II. Commercial, Institutional, Residential and Public Assembly Interiors

Area/Activity	Illuminance Category
Air terminals (see **Transportation terminals**)	
Armories	C[1]
Art galleries (see **Museums**)	
Auditoriums	
Assembly	C[1]
Social activity	B
Banks (also see **Reading**)	
Lobby	
General	C
Writing area	D
Tellers' stations	E[3]
Barber shops and beauty parlors	E
Churches and synagogues	(see page 7-2)[4]
Club and lodge rooms	
Lounge and reading	D
Conference rooms	
Conferring	D
Critical seeing (refer to individual task)	
Court rooms	
Seating area	C
Court activity area	E[3]
Dance halls and discotheques	B

For footnotes, see page 2-19.

V-21

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Lighting Selector Guide

Below is a simple five-step procedure to help you select the right equipment for a specific job. Typical examples – with illustrations, easy-to-read charts, and layouts – are included to ensure correct results.▲

The five steps are:

1.) **Determine Area Lighting Needs and Operational Factors** **Page L-3**	When known, proceed to Step 2
2.) **Select Type of Lamp** **Page L-4**	When known, proceed to Step 3
3.) **Select Type of Lighting Fixture** **Page L-6**	When known, proceed to Step 4
4.) **Calculate Number of Fixtures Required** **Page L-7**	When several light sources or systems seem suitable, determine most economical one▲
5.) **Determine Placement of Fixtures and Make Layout** **Page L-12**	

▲ Denotes revision.

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1

Determine Area Lighting Needs and Operational Factors

The selection of the proper fixture/lamp combination and the determination of the number of fixtures required is a function of the desired quantity and quality of light required, together with consideration of any special factors arising from the nature of the work operation.

Several aspects of this selection process are discussed below. The conditions will vary from job to job. It is important to consider these conditions if the lighting system is to yield optimum results.

A) Determine Illumination Quantity Required

The Illuminating Engineering Society in the current IES Lighting Handbook gives a comprehensive listing of footcandle levels recommended for all types of Industrial Lighting. A condensed version of this listing is given in Table I and is presented according to the types of visual tasks encountered.

B) Determine Illumination Quality Required

Quality of illumination pertains to the distribution of brightness in the visual environment. Care must be taken to avoid discomforting glare within the normal visual field.

Fixtures normally selected for lower mounting should be designed to limit brightness below the 45° zone.

C) National Electric Code Compliance

The National Electric Code delineates some areas as hazardous, depending on materials or atmosphere within an area. The choice of fixture and lamp is therefore somewhat restricted if the area is classified as hazardous.

In hazardous areas, fixture design and operating temperature of both fixture and lamp must meet strict limitations. These limitations are detailed under Step 3 of this selection guide.

If the area is non-hazardous in nature, the selection of the proper fixture and lamp is less restrictive and should be based on general operational and environmental conditions.

D) Maintenance Considerations

In order to insure optimum performance of the lighting system at a reasonable cost, some of the following related factors must be introduced into the selection process:

- Atmospheric Conditions: Fixtures for use in extremely wet locations should be enclosed and gasketed.

Fixtures for use in extremely dirty locations should provide a minimum of light depreciation under the anticipated maintenance schedule (i.e., reflector with open top and bottom should be used where maintenance is infrequent). Fixtures for use in extremely corrosive atmospheres should have protection for the optical system and have finishes to withstand the particular corrosive agent (i.e., epoxy power finish; enclosed Alzak reflector; Krydon™ fiberglass reinforced polyester reflector)▲

- Accessibility: Since it may be necessary to locate fixtures in inaccessible areas, the fixture and lamp selected should minimize need for maintenance and maximize ease of maintenance when required (i.e., high bay open reflector with mercury lamp).
- Area Usage: The selection of the proper lamp/fixture combination will depend greatly on the required burning hours per year. The anticipated usage should be a major factor in lamp selection.

Table 1 / Recommended Levels of Illuminance

Seeing Task	Typical Type of Work	Illuminance Category	Footcandles†
Difficult	Difficult assembly and inspection, color coding, paper manufacturing (Inspection and Rewinder) finishing operations.	F	100 to 200
Moderate	Moderately difficult assembly and inspection, checking and sorting, service garage repair areas, medium bench work, instrument panel (vertical illumination).	E	50 to 100
Casual	Simple assembly, rough bench work, grinding, simple inspection, wrapping, packing and labeling, control house general lighting.	D	20 to 50
Easy	Rough active storage, washrooms, dry lumber warehouse, compressor houses.	C	10 to 20
Limited	Inactive storage, stairway	B	5 to 10

NOTE: For other industrial footcandle levels such as petrochemical, refer to the Illuminating Engineering Society's Lighting Handbook (Application Volume) for more information.

▲ Denotes revision.

† Values recommended are average maintained footcandles at 30" above floor (work plane).

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2

Select Type of Lamp▲

After identification of the factors discussed in Step 1, the following guide can be used in selecting the proper lamp:

A) Illumination Level

High (30FC or more): high intensity discharge (H.I.D.) lamps are generally the most economic choice.

- Exception: where fixtures must be placed within an operator's normal visual span, a low brightness light source such as fluorescent should be used.

Low (less than 30FC): all light sources can be considered. Selection of best lamp is usually based on other factors.

- Exception: at medium to high mounting, high intensity discharge is generally best.

B) National Electrical Code®

Hazardous locations – all light sources can be considered.

- Exception: Article 500 of the National Electrical Code classifies the various categories of hazardous locations and provides general rules for the application of lighting fixtures in these areas. (See Step 3 of Selection Guide.)
- Exception: where process must be shut down for relamping, high intensity discharge is best due to long lamp life. Non-hazardous locations – all light sources.

C) Accessibility

High intensity discharge lamps should be used where fixtures are relatively inaccessible because of long life and the need for infrequent relamping.

D) Area Usage (Burning Hours)

At more than 2,000 burning hours per year, high intensity discharge and fluorescent lamps generally yield the lowest system cost.

At less than 2,000 hours per year, incandescent may be the best system depending on the size of the area, mounting height and illumination level required.

E) Other Considerations

- Energy cost: where energy cost is high, high intensity discharge lamps generally prove most economical. H.I.D. lamps produce more lumens per watt of electricity than other lamp types.
- Safety: due to warmup and restart characteristics of high intensity discharge lamps, auxiliary or emergency lighting should be used in critical areas.

▲ Denotes revision.

Continued

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2 (continued)

Select Type of Lamp▲

The following table of lamp characteristics provides guidelines for choosing the best lamp. If the decision is not obvious, contact your Crouse-Hinds representative for a computer analysis of the option desired.

Table II/Lamp Characteristics

Lamp	Advantages	Disadvantages
1. Incandescent	Low initial cost. Good color rendition. Good light control. Instant restart.	Low light output (lumens per watt), short lamp life (500-2000 hrs). High operating cost.
2. Mercury	Long lamp life (24,000 hrs). High light output per watt. Low operating cost.	High initial cost. Requires warmup period. Does not restart immediately after power outage.
3. Metal Halide	Moderately long lamp life (7500 + hrs). High light output (lumens per watt). Makes colors look close to natural. Low operating cost.	High initial cost. Requires warmup period. Does not restart immediately after power outage.
4. High Pressure Sodium	Good beam control. Long lamp life (24,000 hrs). Highest lamp output (lumens per watt). Low operating cost. Shortest restart time of H.I.D. lamps (instant with optional instant restrike).	High initial cost. Requires warmup period.
5. Fluorescent	Long lamp life (7500-24,000 hrs). High light output per watt. Low operating cost. Low brightness. Cool operation.	High initial cost. Poor light control. Output may vary with ambient temperature.
6. Quartz	Excellent color rendition. Good beam control. Good lumen maintenance (light output remains almost the same throughout life).	Low light output (lumens pwer watt). Medium lamp life (2000-4000 hrs). High operating cost. High lamp temperature.

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3

Select Type of Lighting Fixture

Choice of Reflector

The following list gives broad guidelines for selection of the proper reflectors.

Mounting Height Above Floor	Reflector
Up to 19′	Dome
20′ or more	High bay (Wide, Medium, Narrow)

Where low footcandle levels will be provided, reflectors may be used at higher mounting heights than shown; where high footcandle levels will be provided, reflectors may be used at lower mounting heights than shown in the table.

Quick Selector (Environment—Product)

Opposite the industrial environments listed below are the lighting fixtures designed and approved to meet the requirements unique to each environment. Where different types of light sources might be used, a choice is given.

Environment		Type	Description	Cat. Sect.
Corrosive	Enclosed & Gasketed	NDA	General—Incandescent	1L
		NDA	General—H.I.D.	3L
		NMV Champ*	General—H.I.D.	3L
		NFW	General—Fluorescent	5L
		NFA	General—Fluorescent	5L
		HPSM	General/Flood—H.I.D.	6L
		N2LPS	Emergency-Halogen	9L
Explosive Vapors (Class I, Div. 1)	Explosion-proof	EV	General—Incandescent	2L
		EVM Hazard•Gard*	General—H.I.D.	4L
		EVF	General—Fluorescent	5L
		EVFT	General—Fluorescent	5L
		QBE	Flood—Quartz	6L
		RCDE/RCDER	Flood—Incandescent	6L
		CEHID	Flood—H.I.D.	6L
		ELPS	Emergency—Halogen	9L
		EV	Strobe—Incandescent	9L
Combustible Dusts (Class II, Div. 1)	Dust-ignition-proof	EV	General—Incandescent	2L
		DMV *Champ**	General—H.I.D.	3L
		EVM Hazard•Gard*	General—H.I.D.	4L
		FVN	General—Fluorescent	5L
		FVS	General—Fluorescent	5L
Moisture, Non-Combustible Dusts, or Potential for Hazardous Vapors Class I, Div. 2	Enclosed & Gasketed	*Vaporgard*™	General—Incandescent	1L
		V Series	General—Incandescent	1L
		NDA	General—Incandescent	1L
		LMV *Champ**	General—H.I.D.	3L
		NDA	General—H.I.D.	3L
		VMV *Champ**	General—H.I.D.	3L
		Vaporgard™	General—Mercury Vapor	3L
		FVN	General—Fluorescent	5L
		VFA	General—Fluorescent	5L
		NFA	General—Fluorescent	5L
		FVS	General—Fluorescent	5L
		FMV *Champ**	Flood—H.I.D.	6L
		HPSM	General/Flood—H.I.D.	6L
		N2LPS	Emergency—Halogen	9L
Non-Hazardous	Enclosed & Gasketed	NFW	General—Fluorescent	5L
		FMR	General—Fluorescent	5L
		CGAL	Flood—H.I.D.	6L
		CMVM	Flood—H.I.D.	6L
		CVTF	General—H.I.D.	6L
		HBLF	General—H.I.D.	8L
	Open or Enclosed			8L

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4

Calculate the Number of Fixtures Required

For uniform lighting of a specific area, the **lumen method** is used to calculate the number of fixtures required. This method takes into account not only the direct light from the fixture, but also that which is reflected from the ceiling, walls and floor. As the calculations will show, the higher the reflectivity of the surfaces, the fewer number of lighting fixtures required. Clean, light-colored surfaces also provide visual comfort.

The Coefficient of Utilization as used in these calculations makes allowances for light absorbed by walls and ceiling, and the light absorbed within the fixture.

To obtain the Coefficient of Utilization, the reflection factors of the walls, floors, and ceiling must be estimated. These reflectances should be the minimum values expected just before cleaning or repainting of the surfaces. The reference below gives approximate factors for various surfaces.

Color	Reflectance Factor
White	80%
Light tints of blue-green, cream, blue, buff or gray	70%
Medium blue-green, yellow, medium buff, or gray	50%
Dark gray, medium blue	30%
Dark blue, brown, dark green, and many wood finishes, such as dark oak and mahogany	10%

When supplementary lighting (highlighting) or floodlighting is needed, use the **point-by-point** method to determine footcandles at a specific point or points on the work plane. This method can also be used with angle reflectors for lighting of irregular rooms or where ceiling use is restricted. Candlepower distribution curves for individual lighting units are shown on the appropriate catalog pages.

Basic Steps in the Lumen Method
(Zonal Cavity Method)

Step 4a Determine Cavity Ratios
Step 4b Determine Cavity Reflectances
Step 4c Determine Coefficient of Utilization
Step 4d Determine Light Loss Factor
Step 4e Calculate Lamp Lumens Required
Step 4f Calculate Number of Fixtures Required

4a
Determine Cavity Ratios

There are three Cavity Ratios that should be determined, as in Figure 1:

Ceiling Cavity Ratio
Room Cavity Ratio
Floor Cavity Ratio

Each of these ratios can be found through use of Table IV, page L-8. Simply find the appropriate Cavity Depth, whether it is Ceiling Cavity Depth (h_{CC}), Room Cavity Depth (h_{RC}), or Floor Cavity Depth (h_{FC}), and match it with the room length and width to obtain the Cavity Ratio.

For example, to determine the Ceiling Cavity Ratio when the Ceiling Cavity Depth (distance from fixture to ceiling) is 4', the width of the room 20' and the length 60', cross-reference to Cavity Depth 4.0, width 20, length 60, and find Ceiling Cavity Ratio of 1.3.

If the Room Cavity Depth (distance from fixture to work plane) is 12', then the Room Cavity Ratio would be 4.0.

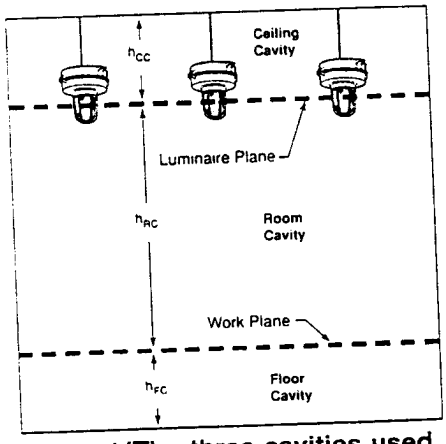


Figure 1/The three cavities used in the Lumen Method

4b
Determine Cavity Reflectances

Effective reflectances of the different room cavities are determined in Table V, page L-9, by using the estimated ceiling, wall and floor reflectances together with the corresponding cavity ratios.

Using the example in Step 4a, we estimate the wall reflectance at 70% and the ceiling reflectance at 70%. Using the Ceiling Cavity Ratio of 1.3 (also from Step 4a) in Table V, we find the Effective Ceiling Cavity Reflectance is 61%.

4c
Determine Coefficient of Utilization

The Coefficient of Utilization is determined from the CU table found on the catalog page for the previously selected fixture/lamp combination.

Using our example again, the three required factors for use with the CU table would be:

Room Cavity Ratio
(from Step 4a) 4.0
Wall Reflectance
(from Step 4b) 70%
Effective Ceiling Cavity Reflectance
(from Step 4b) 61%

In most instances some interpolations will be necessary to obtain the proper Coefficient of Utilization.

You will note that the table gives Coefficients of Utilization for a 20% Effective Floor Cavity Reflectance. Use of this factor for all applications will provide reasonable accuracy; however, if more accuracy is desired, refer to the current Illuminating Engineering Society Handbook for an additional detailed step.

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4d
Determine Light Loss Factor

The light loss factor takes into account two things: lamp light output dropoff (lamp lumen depreciation) and dirt accumulation on the luminaire, lamp and reflector. The table below lists suggested total light loss factors according to light source and operating conditions. (Other factors that may affect light loss, such as voltage to luminaire, luminaire ambient temperature (fluorescent) and ballast operating characteristics, should also be considered.)

Suggested Total Light Loss Factors

Operating Conditions

CLEAN	AVERAGE	DIRTY
Clean air, free of fumes and dust, fixtures scheduled to be cleaned frequently, and lamps replaced systematically.	Less favorable atmospheric conditions, fixtures cleaned at fairly frequent intervals, and lamps replaced only after burnout.	Quite dirty locations and work atmospheres, infrequent maintenance of lighting equipment.

Lamp and Fixture	Clean	Average	Dirty
Incandescent	.74	.69	.64
Quartz	.82	.76	.70
Mercury	.70	.65	.60
Metal Halide	.64	.59	.55
High Pressure Sodium	.77	.71	.66
Fluorescent	.71	.66	.61

4e
Calculate Lamp Lumens Required

Formula: Total Lamp Lumens =

$$\frac{\text{Footcandles[†] X Area of Room (sq. ft.)}}{\text{Coefficient of Utilization[‡] X Light Loss Factor[◆]}}$$

4f
Calculate Number of Fixtures Required

Formula:

$$\text{Fixtures Required} = \frac{\text{Total Lamp Lumens}}{\text{Total Lamp Lumens per Fixture}}$$

Typical Lamp Lumens from list below:◆◆

Lamp	Watts	Lumens	Life (hours)
Incandescent (inside frosted)	100	1750	750
	150	2880	750
	200 A-23; PS-30, PS-25	4010 3710	750 750
	300 PS-25; PS-30; PS-35;	6360 6110 5820	750 750 1000
	500	10850	1000
Quartz	500	10950	2000
Mercury Vapor (deluxe white)	75	2800	16000
	100	4200	24000
	175	8600	24000
	250	12100	24000
	400	22500	24000
	1000	63000	24000
Metal Halide (clear)	70	5600	10000
	100	7800	10000
	175	14000	10000
	250	20500	10000
	400	36000	20000
	1000	110000	12000
High Pressure Sodium (clear)	35	2250	16000
	50	4000	24000
	70	6400	24000
	100	9500	24000
	150	16000	24000
	200	22000	24000
	250	27500	24000
	400	50000	24000
	1000	140000	24000
Fluorescent (cool white)	40 (Slimline)	3000	9000
	40 (Rapid Start)	3150	20000
	60 (800 ma)	4300	12000
	110 (1500 ma)	6850	10000
	215 (1500 ma)	16000	12000
Fluorescent (twin tube)	5	250	10000
	7	400	10000
	9	600	10000
	39	2850	12000
	40	3150	20000

In using the formula make sure you divide by the total lamp lumens per fixture. For example, if an EVF233 3-lamp, 40 watt, Slimline fixture is being used, you would divide the total lamp lumens by 3 X 3000 or 9000 lumens.

[†] from Table 1, page L-3 or IES Handbook
[‡] from catalog page on fixture selected—and calculated from 4b
[◆] from above
◆◆ For lamp data check current lamp manufacturing catalog. **Variances exist between manufacturers.**

Continued

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4f (continued)

EXAMPLE: Lumen Method

Requirement:
Design a system for lighting a room classified Class I, Division 2, Group D

Assumptions:
a) Room dimensions – 40' wide; 80' long; 15' high
b) Fixtures to be suspended 3' from ceiling; work plane is 4' above floor
c) Ceiling is off-white; walls are light grey; floor is concrete
d) Good maintenance conditions exist
e) Lighting system will be operated 16 hours daily; 5 days a week
f) Color rendition is not critical

Using the Coefficient of Utilization worksheet, follow procedure given below. Answers to our example are on the worksheet.

Step #1. Determine required illumination level in FOOTCANDLES (FC) – Table 1, page L-3.
Step #2. Select type of lamp – pages L-4 and L-5. For the room size in example, considering long hours of operation and color rendition not being critical, high pressure sodium lighting is recommended.
Step #3. Select type of fixture, page L-6. VMV series *Champ*® lighting fixtures are recommended. For our example VMVS3A150G pendant fixture with RD70 dome reflector is selected.
Step #4. Calculation of number of fixtures necessary.
(A) Compute CAVITIES of ceiling, room and floor. H_{CC}; H_{RC} and H_{FC} (see sketch on worksheet).
(B) Obtain REFLECTANCE FACTORS (using values on page L-9) RC; RW and RF (see sketch on worksheet).
(C) Compute CAVITY RATIOS for ceiling, room and floor using Formula or Table IV, page L-8.

Formula

$$CCR = \frac{5 \times H_{CC}(L + W)}{L \times W}$$

$$RCR = \frac{5 \times H_{RC}(L + W)}{L \times W}$$

$$FCR = \frac{5 \times H_{FC}(L + W)}{L \times W}$$

(D) Determine Effective Ceiling Reflectance from Table V, page L-9. See work sheet for values of RC, RW and CCR.
(E) Determine Coefficient of Utilization – from CU table. For a VMVS3A150G fixture, applying an Effective Ceiling Cavity Reflectance of 70; a wall reflectance of 50 and a room Cavity Ratio of 1.5 (all figures applicable to our example), the CU (see CU Table, page 3L-5) is at mid-point between .804 and .690, which is .747.
(F) Determine Light Loss Factor (LLF) – page L-10.

(G) Compute Total Lamp Lumens required.
Formula

$$\frac{(FC \times \text{Area})\ 50 \times 80 \times 40}{(CU \times LLF)\ .747 \times 0.77} = 278{,}169 \text{ Lumens}$$

Therefore, the number of VMVS3A150G fixtures required

$$= \frac{\text{Total Lamp Lumens } 278{,}169}{\text{Lamp Lumens per fixture (page L-10) } 16{,}000} = 17.4$$

= 17 VMVS3A150G fixtures with RD70 dome reflectors (use 18 fixtures, see page L-12).

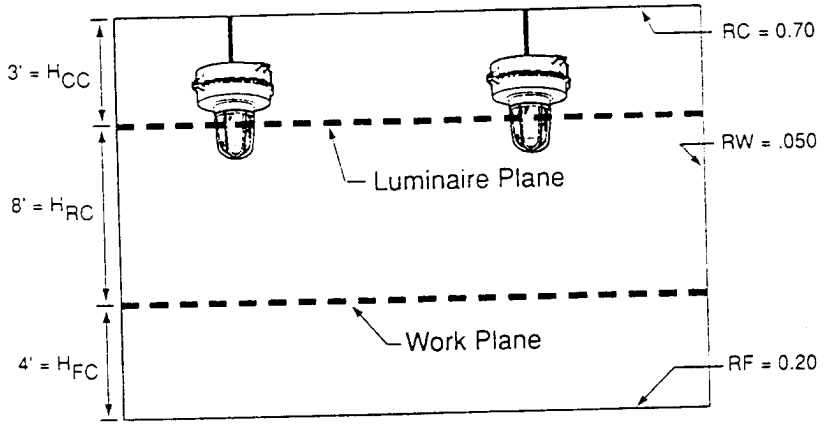
Coefficient of Utilization Worksheet

Job Requirement:
(See typical example at left)
Given Data:
(See typical assumptions at left)
Lamp Characteristics:
Type – High Pressure Sodium
Catalog # – VMVS3A150G with RD70 dome reflector
Lumens – 16,000
LLF – 0.77

No. of Footcandles Required: 50

Room: Length 80' Width 40' Height 15'

Cavities **Reflectance**



Cavity Ratios: CCR 0.56 RCR 1.5 FCR 0.75

Effective Ceiling Cavity Reflectance:	72 (use 70)
Wall Reflectance:	50
CU:	.747
Total Lumens Required:	278,170
No. of Fixtures:	18 fixtures (see page L-12) Use 3 × 6 spacing

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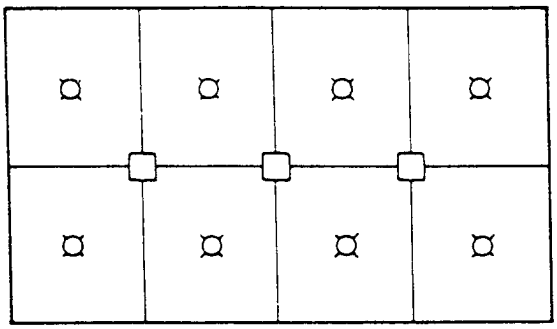
5 Determine Placement of Fixtures and Make Layout

Using the number of units as determined in Step 4 as a basic quantity to work with, determine the number of lights per row and number of rows required for the lighting system. Logic plays a part; for example: if a room is 4 times as long as it is wide, you should have 4 times as many fixtures in each row as there are number of rows. In any case, the distance between the lighting units should not be greater than the mounting height of the units above the floor. The distance between the wall and first fixture should not be more than ½ the spacing between the units, and in situations where work is done immediately adjacent to the wall, the distance should be reduced to ⅓ or ¼ the distance between units.

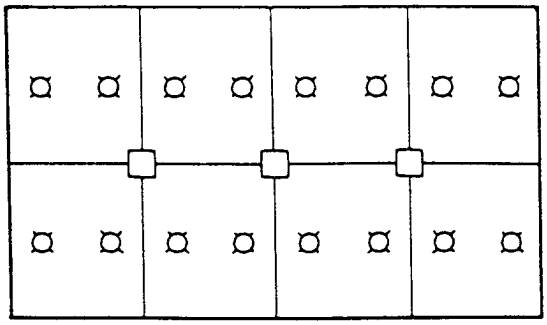
In rooms that are divided by columns or beams, it is desirable to locate the units symmetrically in the bays. The following layouts will serve as a guide in planning such installations.

Important: Remember to observe the permissible spacing to mounting height ratio or spacing criterion. If the number of fixtures is insufficient to fulfill this requirement, recalculate using lower wattage fixtures.

Figure 2 Typical Placement
Incandescent/H.I.D., etc.

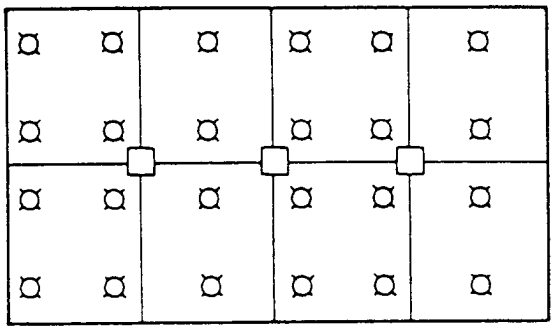


One unit per bay – satisfactory only where the bay size is no greater than the maximum allowable spacing – an unusual condition.

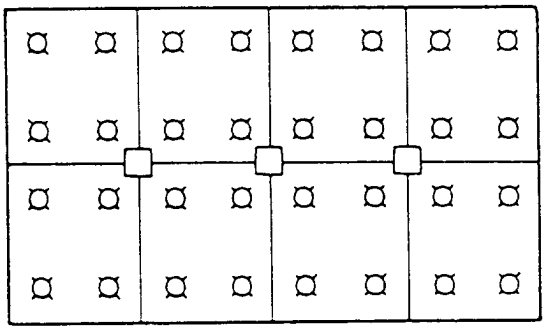


Two units per bay – usually applicable only in narrow bays, where the width is less than ⅔ the length.

Figure 2 (continued)

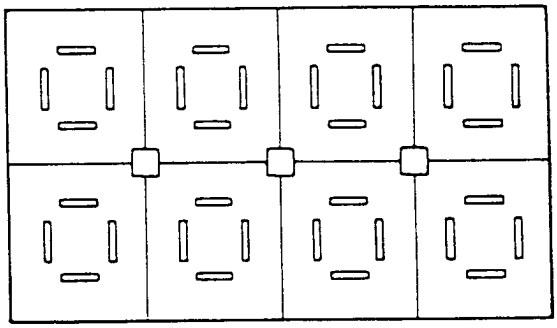


Four-Two system – equivalent to three units per bay or four per bay where spacing allows.

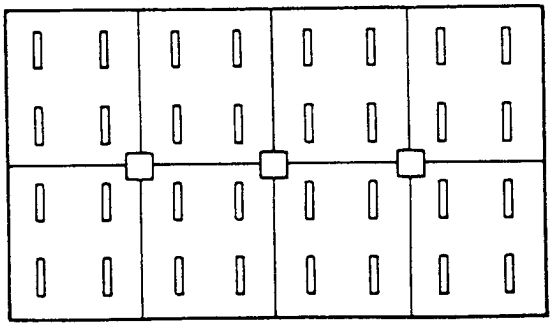


Four units per bay – if necessary could run in continuous rows across room, or turned and run lengthwise with room.

Fluorescent



Grid pattern – usual condition dependent on room size and type of work done there.



Four units per bay – this is the most common system for the square bay of usual dimensions.

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8. Turn off lights when not needed.
9. Control window brightness.
10. Utilize daylighting as practicable.
11. Keep lighting equipment clean and in good working condition.
12. Post instructions covering operation and maintenance.

65. Lighting and the Thermal Environment. Effective building design requires a provision for efficient utilization or dissipation of lighting heat. The benefits of integrating building heat in lighting design are: (1) improved performance of the air-conditioning system, (2) more efficient handling of lighting heat, and (3) more efficient lamp performance if fluorescent lamps are the light source.

The control and removal of lighting heat before it enters the occupied space can reduce heat in that space, reduce air changes and fan horsepower, lower temperature differentials required in the space, enable a more economical cooling-coil selection because of the higher temperature differential across the coil, and reduce luminaire and ceiling temperature, thereby minimizing radiant effects.

The degree to which any of these benefits may be obtained depends on many variables such as the quantity of energy involved, the type of heat-transfer mechanism, the temperature difference between source and sink, and the velocity and quantity of fluids and/or air available for heat transfer. However, in most applications luminaire temperature will be higher than room temperature; so fluids at room temperature can be effective in heat transfer. Any unwanted heat that can be removed at room temperature or above can be removed much more economically than at lower temperatures. Various publications of ASHRAE[1] and IES should be consulted.

QUANTITY AND QUALITY OF ILLUMINATION

66. Levels of Illumination. Visual performance is a function of a number of fundamentally important factors. Some of these are the size of the object or detail to be seen, the contrast of the detail with its immediate background, the luminance of the object, the time available to see it, the luminance relation between the object and its surroundings, the visual capability of the human seeing machine, and the level of personal motivation.

Many lighting designers have used single-value illuminance recommendations published by IES since 1958.[2] In 1979, the Illuminating Engineering Society of North America (IESNA) adopted a range approach for the prescription of task-lighting levels. The new procedure involves illuminance ranges, plus a system using weighting factors for the selection of the top, middle, or lower value of the range. Designers can thus tailor their lighting proposals to the needs of the task and the persons performing those tasks. Such coordination became especially important during the 1970s, when the wisdom of conserving energy became generally recognized.

The designer must have several types of information about the visual tasks:

1. What are the task details that need to be seen?
2. How old are the persons who perform the tasks?
3. Is speed and/or accuracy a critical, important, or unimportant consideration?
4. Are the task details seen against a light, medium, or dark background?

These four types of information may require additional effort and investigation by the designer, but they must all be considered in order to effectively use the new IESNA illuminance selection system. Some typical ranges are given in Table 26-21. Weighting factors for areas or

[1] *ASHRAE Handbook.*

[2] Based on vision research sponsored by the Illuminating Engineering Research Institute. See Blackwell, H. R.: Development and Use of a Quantitative Method for Specification of Interior Illumination Levels; *Illum. Eng.*, June 1959, p. 317.

TABLE 26-21 Typical Recommended Illuminance Ranges*

Area or activity	Footcandles on task	Lux†
Industrial assembly or inspection		
Simple	20–30–50	200–300–500
Moderately difficult	50–75–100	500–750–1000
Difficult	100–150–200	1000–1500–200(
Very difficult	200–300–500‡	2000–3000–500(
Exacting	500–750–1000‡	5000–7500–10,0(
Machine shops		
Rough bench or machine work	20–30–50	200–300–500
Medium bench or machine work, ordinary automatic machines, rough grinding, medium buffing and polishing	50–75–100	500–750–1000
Fine bench or machine work, fine automatic machines, medium grinding, fine buffing and polishing	200–300–500‡	2000–3000–5000
Extrafine bench or machine work, grinding, fine work	500–750–1000‡	5000–7500–10,00
Materials handling		
Wrapping, packing, labeling	20–30–50	200–300–500
Picking stock, classifying	20–30–50	200–300–500
Loading, inside truck bodies and freight cars	10–15–20	100–150–200
Reading copied tasks		
Ditto copy	50–75–100§	500–750–1000§
Mimeograph	20–30–50	200–300–500
Thermal copy, poor copy	100–150–200§	1000–1500–2000§
Xerograph	20–30–50	200–300–500
Xerography, third generation and greater	50–75–100	500–750–1000
Reading handwritten tasks		
#3 pencil and softer leads	50–75–100§	500–750–1000§
#4 pencil and harder leads	100–150–200§	1000–1500–2000§
Ball-point pen	20–30–50§	200–300–500§
Felt-tip pen	20–30–50	200–300–500
Handwritten carbon copies	50–75–100	500–750–1000
Nonphotographically reproducible colors	100–150–200	1000–1500–2000
Chalkboards	50–75–100§	500–750–1000§
Reading printed tasks		
6-point type	50–75–100§	500–750–1000§
8- and 10-point type	20–30–50§	200–300–500§
Glossy magazines	20–30–50¶	200–300–500¶
Maps	50–75–100	500–750–1000
Newsprint	20–30–50	200–300–500
Typed originals	20–30–50	200–300–500
Typed second carbon and later	50–75–100	500–750–1000
Telephone books	50–75–100	500–750–1000

* From *IESNA Lighting Handbook*. For complete listing see handbook.

† Lux is SI unit equal to 0.0929 fc. For simplicity, the illuminance ranges above use a rounded value of 1 fc = 10 lux.

‡ Obtained by a combination of general and supplementary lighting.

§ Task subject to veiling reflections. Illuminance listed is not an ESI value.

¶ Especially subject to veiling reflections. It may be necessary to shield the task or to reorient it.

TABLE 26-21a Weighting Factors for Selecting Specific Values within Illuminance Ranges in Table 26-21*

Task and worker characteristics	Weighting factor †		
	−1	0	+1
Workers' ages	Under 40	40–55	Over 55
Speed and/or accuracy	Not important	Important	Critical
Reflectance of task background	More than 70%	30–70%	Less than 30%

* Adapted from the *IES Lighting Handbook*, for ranges 20–30–50 fc and above. See handbook for complete table and footnotes.

† Add the three factors algebraically. If the total is −2 or −3, use the lowest of the three illuminances in the range for the particular task. If the total is +2 or +3, use the highest of the three illuminances. Otherwise use the middle illuminance of the range.

activities where the recommended ranges are 20–30–50 fc or higher are given in Table 26-21a. Thus the user must be consulted before the appropriate illuminance level can be selected.

It is not unusual for building and plant engineers to target new or relighting projects for higher illuminance levels, based on experience with the activities involved. Too, since the IES recommendations are considered as minimums with respect to time, the user will be more familiar with probable maintenance procedures that will affect the design calculations.

In stores or sales areas, desirable patterns of brightness help capture the attention and interest of potential customers passing by. Once inside, the lighting system can help determine what they look at, what they buy, and how often they return. The illuminance selection procedure described here is not intended for spaces where merchandising is the principal activity and where lighting's function is the advantageous display of goods.

From 1972 to 1979 the IES recommended illuminances for many office and school tasks were given in terms of equivalent sphere illumination (ESI). ESI values are still useful as a tool in determining the effectiveness of measures to control veiling reflections and as a part of the evaluation of lighting systems. However, ESI values are not included in the illuminance ranges found in Table 26-21.

The illuminance levels for safety given in Table 26-22 are intended as target values considering all causes of light loss.

TABLE 26-22 Illuminance Levels for Safety*

Hazards requiring visual detection	Slight		High	
Normal activity level†	Low	High	Low	High
Illumination level:				
Footcandles	0.5	1.0	2.0	5.0
Lux	5.4	11.0	22.0	54.0

* Minimum illumination for safety of personnel, absolute minimum at any time and at any location on any plane where safety is related to seeing conditions.

† Special conditions may require different levels of illumination. See "American National Standard Practice for Industrial Lighting," ANSI/IES RP-7-1983.

67. Veiling Reflections. Substantial losses in tasks contrast and hence in visibility and visual performance can result when light sources are reflected in such subtly specular (shiny) visual tasks as typing on bond paper. The apparent "veil" that is cast over a task when a light source is reflected in it may be so subtle as to be undetectable by the eye. Many factors contribute to veiling reflections and each of them, individually, has long been known. The problem is to integrate the effects of these interrelated factors. The factors are the visual task and its specularity; the worker's orientation, location, and viewing angles; and the lighting-system layout and luminaire light distribution and polarization.

The following are guidelines for reducing veiling reflections:

1. Where possible, written or printed tasks should be on matte paper using nongloss inks. The use of glossy paper stock and hard pencils should be minimized.
2. As long as the "geometry" of the situation is not changed, compensation for contrast losses can be made by increased illumination.
3. The use of luminaires with specific distributions and polarization characteristics for reducing reflections should be considered.
4. Side lighting such as from windows is effective in reducing veiling reflections. From the standpoint of visual comfort, workers should be positioned so their line of sight is parallel to or away from windows—rather than facing them.
5. Light-source positions on either side and behind the workers are preferred.
6. Where work positions can be determined, substantial gains can be made by not positioning lighting equipment in the general area above and forward of the position.
7. Any decision on a lighting installation should also include considerations of its efficiency and the visual comfort in the space.

68. Visual Comfort. Visual comfort may occur when there are no overly high luminances within a worker's visual field. High luminances can also distract and can even reduce visibility. Luminaires and fenestrations which have luminances that are too high for the environment in which they are located will produce discomfort. Discomfort from direct glare is reduced by:

1. Decreasing the luminance of lighting equipment or other sources of objectionable glare, such as windows and overhead skylights.
2. Diminishing the area of uncomfortable luminances (with glare zone luminance constant).
3. Increasing the angle between the source and line of sight.
4. Increasing the general luminance in the room.

A rating system based on the degree of freedom from discomfort glare in a proposed lighting installation is called *visual comfort probability (VCP)*. Evaluation is based on the following factors which influence subjective judgments of visual comfort: room size and shape; room surface reflectances; illumination levels; luminaire type, size, luminance, maximum luminance, and light distribution; number of luminaires; luminance of the field of view; observer location and line of sight; and differences in individual glare sensitivity. Since each of these factors can vary considerably, a standard set of conditions has been established and used as a basis for VCP tables.

Direct discomfort glare should not be considered a problem in lighting installations if all three of the following conditions are satisfied:

1. The VCP is 70 or more.
2. The ratio of maximum to average luminaire luminance does not exceed 5 : 1 (preferably 3 : 1) at 45, 55, 65, 75, and 85° from nadir, crosswise and lengthwise.
3. Maximum luminaire luminances, crosswise and lengthwise, do not exceed the following values:

Angle above nadir, deg	Max. luminance, fL (cd/m²)
45	2250 (7710)
55	1605 (5500)
65	1125 (3860)
75	750 (2570)
85	495 (1695)

Wall reflectance: 50%; effective ceiling cavity reflectance 80%; effective floor cavity reflectance: 20%
Luminaire No. 000
Work-plane illuminance: 100 footcandles

Room		Luminaires lengthwise				Luminaires crosswise			
W	L	8.5*	10.0*	13.0*	16.0*	8.5*	10.0*	13.0*	16.0*
20	20	78	82	90	94	77	81	89	93
20	30	73	76	82	88	72	75	81	86
20	40	71	73	78	82	70	72	76	80
20	60	69	71	74	78	68	70	73	76
30	20	78	82	88	92	77	81	87	92
30	30	73	75	80	85	72	71	79	84
30	40	70	72	75	78	69	71	74	77
30	60	68	69	71	74	67	69	70	73
30	80	67	69	69	72	67	68	68	71
40	20	79	82	87	92	79	82	87	91
40	30	74	76	79	84	73	75	78	83
40	40	71	72	74	77	70	71	73	76
40	60	68	69	70	72	68	69	69	71
40	80	67	68	68	70	67	68	67	69
40	100	67	68	67	69	67	67	66	68
60	30	75	76	79	83	74	76	78	82
60	40	71	72	74	76	71	72	73	76
60	60	69	69	69	71	68	69	68	70
60	80	68	68	67	69	67	68	66	68
60	100	67	67	66	67	67	67	65	66
100	40	74	75	75	78	74	71	75	77
100	60	71	71	71	72	71	71	70	72
100	80	70	70	68	69	70	69	67	69
100	100	69	68	66	67	69	68	66	67

* Luminaire mounting heights above the floor, in feet.

FIG. 26-35 Example of a typical tabulation of visual comfort probability (VCP) values.

Figure 26-35 is an example of a typical tabulation of calculated VCP values for a general lighting system providing 100 fc using fictitious luminaire no. "000."

69. Luminance Distribution. The luminance relationship of the various surfaces in the visual field is important. When the eyes scan a task, an adaptation level is established consisting primarily of the task luminance. As the eyes leave the task and look at an area of a different luminance, there is a sudden loss of sensitivity to see the contrast of the detail in the new area until the eyes can readapt after an appreciable length of time. In order to see the detail of a visual task accurately and quickly, luminance ratios of appreciable areas in the visual environment should be kept low. Table 26-23 is an example of recommended luminance ratios for offices.[1]

TABLE 26-23 Recommended Luminance Ratios for Offices*

To achieve a comfortable balance in the office and limit the effects of transient adaptations and disability glare, it is desirable and practical to limit luminance ratios between areas of appreciable size from normal viewpoints as follows:
1 – ⅓ between task and adjacent surroundings
1 – ⅓ between task and more remote darker surfaces
1 – 10 between task and more remote lighter surfaces

* These ratios are recommended as maximums; reductions are generally beneficial.

[1] American National Standard Practice for Office Lighting; ANSI/IES RP-1-1982.

To help achieve these ratios, room surfaces should be of high reflectance, as recommended for specific applications.

CALCULATING MAINTAINED ILLUMINANCE

70. Light-Loss Factor. In calculating maintained illuminance (the lowest level before maintenance procedures are instituted) a light-loss factor (LLF) is used to take into account losses in light output due to temperature and voltage variations, dirt accumulation on luminaire and room surfaces, lamp depreciation, maintenance procedures, and atmospheric conditions. The effect of these light losses can be seen in the example shown in Fig. 26-36. It is important

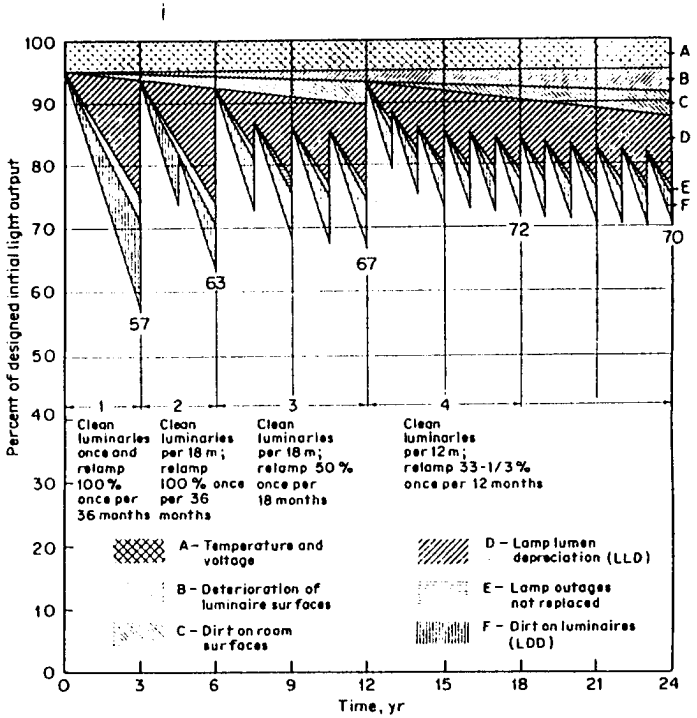


FIG. 26-36 Effect of light loss on illumination level. Example shown is for enclosed surface-mounted luminaires with 40-W fluorescent lamps, operated 10 h a day, 5 days per week, 2600 h per year. Four maintenance systems are shown for comparison purposes. *(IES Lighting Handbook.)*

that all causes of light loss be investigated and maintenance procedures be established in the lighting-design stage to assure adequate illumination in an economical manner without wasting energy.

71. LLF Determination. The LLF (formerly called maintenance factor) is mainly the product of the *lamp lumen depreciation factor (LLD)*, the *luminaire dirt depreciation factor (LDD)*, the *room-surface dirt depreciation factor (RSDD)*, and *lamp burnouts (LBO)*. Data on LLD are available from manufacturers. LBO is the ratio of lamps remaining lighted to the total in the original installation. LDD is obtained from curves, such as shown in Fig. 26-37, a knowledge of the amount of dirt in the room atmosphere, a knowledge of the length of time between luminaire cleanings, and the luminaire category (I to VI) from the manufacturer. RSDD is obtained from a curve and table as shown in Fig. 26-38, where room size, luminaire distribution, room atmosphere, and cleaning cycle are known.

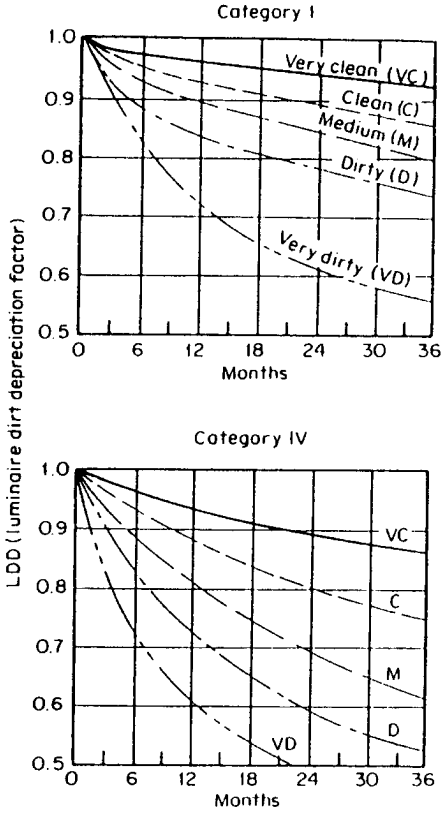
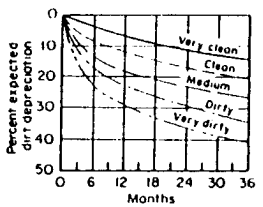


FIG. 26-37 Luminaire dirt depreciation (LDD) factors for two of the six luminaire categories and for five degrees of atmosphere dirtiness. (*IES Lighting Handbook*, 1981 edition.)



Percent expected dirt depreciation	Luminaire distribution type															
	Direct				Semidirect				Direct-indirect				Semi-indirect				Indirect			
	10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40	10	20	30	40
Room-cavity ratio																				
1	.98	.96	.94	.92	.97	.92	.89	.84	.94	.87	.80	.76	.94	.87	.80	.73	.90	.80	.70	.60
2	.98	.96	.94	.92	.96	.92	.88	.83	.94	.87	.80	.75	.94	.87	.79	.72	.90	.80	.69	.59
3	.98	.95	.93	.90	.96	.91	.87	.82	.94	.86	.79	.74	.91	.86	.78	.71	.90	.79	.68	.58
4	.97	.95	.92	.90	.95	.90	.85	.80	.94	.86	.79	.73	.94	.86	.78	.70	.89	.78	.67	.56
5	.97	.94	.91	.89	.94	.90	.84	.79	.93	.86	.78	.72	.93	.86	.77	.69	.89	.78	.66	.55
6	.97	.94	.91	.88	.94	.89	.83	.78	.93	.85	.78	.71	.93	.85	.76	.68	.89	.77	.66	.54
7	.97	.94	.90	.87	.93	.88	.82	.77	.93	.84	.77	.70	.93	.84	.76	.68	.89	.76	.65	.53
8	.96	.93	.89	.86	.93	.87	.81	.75	.93	.84	.76	.69	.93	.84	.76	.68	.88	.76	.64	.52
9	.96	.92	.88	.85	.93	.87	.80	.74	.93	.84	.76	.68	.93	.84	.75	.67	.88	.75	.63	.51
10	.90	.92	.87	.83	.93	.86	.79	.72	.93	.84	.75	.67	.92	.83	.75	.67	.88	.75	.62	.50

26-38 Room-surface dirt depreciation (RSDD) factors.

*72. **Example of Calculation Procedure.*** Given a direct type of luminaire of cate with 40-W fluorescent lamps (LLD = 0.84). Room atmosphere is very clean and cle performed every 18 months. Room-cavity ratio is 2. Lamps are replaced at burnout.

LLD = 0.84 (from manufacturers' lamp tables)
LDD from Fig. 26-37 = 0.91
RSDD from Fig. 26-38 = 0.98
LBO = 1
$LLF = 0.84 \times 0.91 \times 0.98 \times 1.0 = 0.75$

CALCULATION OF AVERAGE ILLUMINANCE AND LUMINANCE

*73. **General Lighting.*** The design of general lighting systems is governed by room d sions, structural features, reflectances of room surfaces, mounting height of the luminair the distribution and maintenance characteristics of the luminaire. The choice of the lum depends on the service to which it is to be put, which assumes a certain experience in sele or other aids such as manufacturers' data, which assist the designer in making a sele appropriate from the standpoints of freedom from glare, efficiency, decorative value economy. The ultimate "brightness pattern" of the room is an important factor in the d

The beginning concept of general lighting design is that of delivering a specified av footcandle level of illimination to a horizontal plane in a room. The light generated by the l in such a system is variously affected and considerably reduced by reflection, diffusion, absorption as it impinges on reflectors and transmitting media in the luminaires and on ceil wall, floors, and on the objects in the room.

*74. **Luminaire Spacing and Mounting Height.*** The maximum permissible spacin each type of luminaire is given in the Photometric Report provided by the manufacturer. T spacing limitations are related to the mounting height (usually above the work plane) of di semidirect, and general-diffuse luminaires and to the ceiling height for indirect and semidi systems. Observance of such limitations usually will ensure satisfactory uniformity of illumi tion throughout the major portion of the room so that all parts of the area will be equally suit for the intended use. Peripheral areas may require special treatment, as indicated below. Illu nance is usually considered uniform if the maximum and minimum values are within plu minus one-sixth of the average illuminance in the area. Closer spacing than indicated by spacing criterion improves uniformity and reduces shadows. The spacing-mounting-hei relations apply not only to individual luminaires but to the spacing between continuous s tions, luminous panels, troffers, or sections of coves.

The distance between luminaires and the wall should not exceed one-half the dista between luminaires. Where desks or benches might be located along the wall, the dista between luminaires and the wall should not exceed 2½ ft. Likewise, the ends of continuous ro of fluorescent luminaires should preferably be within 6 to 12 in of the wall. Additional lum naires or luminaires having a greater number of lamps may be required adjacent to the wal particularly where walls have low reflectance. Where direct and semidirect luminaires are us under such conditions, the perimeter luminaires should be carefully located to avoid shado on the work from the worker.

*75. **Zonal-Cavity (Lumen) Method.***[1] The lumen method is used in calculating the ill minance that represents the average of all points on the work plane in an interior. It is based o the definition of illuminance as luminous flux per unit area, or

$$\text{Illuminance} = \frac{\text{luminous flux}}{\text{area}}$$

[1] Zonal Cavity Method of Calculating and using Coefficients of Utilization, LIX, p. 309. *n. Eng.*, May 1964, vo

where luminous flux is expressed in lumens. If the area is in square feet, the illuminance is in footcandles (lumens per square foot); if the area is in square meters, the illuminance is in lux (lumens per square meter).

Because not all the lamp lumens will reach the work plane owing to losses in the luminaire and at the room surfaces, they must be multiplied by a coefficient of utilization which represents the portion that reaches the work plane. Thus,

$$\text{Initial illuminance} = \frac{\text{number of luminaires} \times \text{lamp lumens} \times \text{coefficient of utilization}}{\text{area}}$$

Since the design objective is usually the minimum maintained illuminance, factors must be applied to account for the estimated depreciation in lamp lumens, the estimated losses from dirt collection on the luminaire surfaces (including lamps), etc.

The formula thus becomes

$$\text{Maintained illuminance} = \frac{\text{number of luminaires} \times \text{lamp lumens} \times \text{CU} \times \text{LLF}}{\text{area}}$$

where CU = coefficient of utilization
LLF = light-loss factor
lamp lumens = total rated lamp lumens per luminaire

The zonal-cavity method considers the actual room as being made up of a ceiling cavity above the luminaires, a floor cavity beneath the work plane, and a room cavity located between the two (see Fig. 26-39).

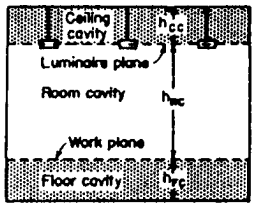


FIG. 26-39 Room cavities.

In the general case, all these cavities are present. In the case of recessed or surface-mounted luminaires, the ceiling cavity is simply the ceiling. When the illumination on the floor is to be determined, the floor cavity becomes the floor.

It is now possible to calculate numerical relationships called "cavity ratios" which may be used to determine effective reflectance of the floor and ceiling and then to find the coefficient of utilization.

The basic steps in the calculation of any average illuminance are as follows:

1. Determine *cavity ratios* for three cavities shown in Fig. 26-39 as follows:

$$\text{Room-cavity ratio, RCR} = \frac{5h_{RC}(L + W)}{LW}$$

$$\text{Ceiling-cavity ratio, CCR} = \frac{5h_{CC}(L + W)}{LW} = \text{RCR}\frac{h_{CC}}{h_{RC}}$$

$$\text{Floor-cavity ratio, FCR} = \frac{5h_{FC}(L + W)}{LW} = \text{RCR}\frac{h_{FC}}{h_{RC}}$$

where h_{RC} = height of room between luminaire plane and work plane; h_{CC} = distance from luminaire plane to ceiling; h_{FC} = height of work plane above floor; L = room length; and W = room width.

Cavity ratios may also be found in Table 26-24 for typical-sized cavities which cover a wide range of room dimensions.

2. Obtain *effective ceiling-cavity reflectance* (ρ_{cc}) for combination of ceiling and wall reflectance to be employed, from Table 26-25. Note that, for surface-mounted or recessed luminaires, CCR = 0 and the ceiling reflectance may be used as the effective cavity reflectance.

3. Obtain *effective floor-cavity reflectance* (ρ_{fc}) for combination of floor and wall reflectances to be employed, from Table 26-25.

4. Obtain *coefficient of utilization* for the luminaire for 20% effective floor-cavity-reflectance condition (tables like 26-28), interpolating between tabulated values as required to match room size and ceiling- and wall-reflectance combinations.

5. If *effective floor-cavity reflectance* (ρ_{fc}) obtained in step 3 differs significantly from 20%, obtain multiplier from Table 26-26 or Table 26-27. Multiply the coefficient of utilization by this multiplier.

6. Determine *average maintained illuminance* by the following formula:

$$\text{fc} = \frac{(\text{rated lamp lumens/luminaire}) \times \text{CU} \times \text{LLF}}{\text{area/luminaire}}$$

If *initial illuminance* is desired, LLF is omitted from the formula.

When the desired average maintained illumination is known, the formula can more conveniently be expressed as

$$\text{Area/luminaire} = \frac{(\text{rated lamp lumens/luminaire}) \times \text{CU} \times \text{LLF}}{\text{fc}}$$

This area divided by the luminaire length gives the approximate spacing between continuous rows, or it may be divided into the total room area to determine the number of luminaires required.

Example. A room is 28 ft wide and 32 ft long and has a 10-ft ceiling height. Reflectances are: ceiling 80%, walls 50%, floor 10%. A recessed four-lamp fluorescent luminaire is to be used. Work plane is 2 ft 0 in. Find the coefficient of utilization.

1. Calculate *cavity ratios* as follows, or look up in table of cavity ratios (Table 26-24).

$$\text{CCR} = 0 \quad \text{(recessed units are used)}$$

$$\text{RCR} = \frac{(5)(8)(28 + 32)}{(28)(32)} = 2.7$$

$$\text{FCR} = \frac{(5)(2)(28 + 32)}{(28)(32)} = 0.67$$

2. In Table 26-25, look up *effective cavity reflectances* for ceiling and floor cavities. ρ_{cc} for the ceiling cavity will be 80%, while ρ_{fc} for the floor cavity will be 11%.

3. With the *room-cavity ratio* RCR known, it is now possible to find the coefficient of utilization for the luminaire in a room having an RCR of 2.7 and effective reflectances as follows (assume luminaire is type described in Table 26-28):

$$\rho_{cc} = 80\% \qquad \rho_w = 50\% \qquad \rho_{fc} = 20\%$$

This CU = 0.44. Note that this is for an effective floor reflectance of 20%, while the actual effective reflectance of the floor ρ_{fc} is 11%. To correct for this, locate the appropriate multiplier in Table 26-26 for the RCR already calculated (2.7). It is 0.948 and is found by interpolating between the numbers for 80 ρ_{cc} and between RCRs of 2.0 and 3.0. Then

$$\text{CU final} = 0.44 \times 0.948 = 0.42$$

4. *Illuminance level* can now be calculated if we know the area per luminaire, the lamp lumen rating, and the light-loss factor.

$$\text{fc in service} = \frac{(\text{rated lamp lumens/luminaire}) \times \text{CU} \times \text{LLF}}{\text{area/luminaire}}$$

76. Luminance Calculations. The ability to predict the luminance is needed to (1) design lighting that promotes both visual comfort and good visual performance, (2) predict illumination at specific points within the environment, and (3) evaluate various criteria of the lighting system such as VCP. Luminance calculations are greatly simplified through the use of *lumi-*

nance coefficients (LC). These coefficients, like coefficients of utilization, may be computed for any specific luminaire. The wall- and ceiling-cavity luminance coefficients for one generic luminaire are found in Table 26-28.

Luminance coefficients are similar to coefficients of utilization and may be substituted into a variation of the lumen method formula in place of the coefficient of utilization. The result obtained is either the average wall luminance or the average ceiling cavity luminance, rather than illumination on the work plane. Thus,

$$\text{Average initial wall luminance} = \frac{\text{total lamp lumens} \times \text{wall luminance coefficient}}{\pi \times \text{floor area}}$$

and

$$\text{Average initial ceiling cavity luminance} = \frac{\text{total lamp lumens} \times \text{ceiling cavity luminance coefficient}}{\pi \times \text{floor area}}$$

If the area is expressed in square feet, the luminance is in candelas per square foot; if the area is in square meters, the luminance is in candelas per square meter. Luminance can be obtained in footlamberts by expressing area in feet and omitting the factor of π in the denominators.

If the maintained average wall luminance or the maintained average ceiling cavity luminance is required, a light-loss factor is introduced.

CALCULATION OF ILLUMINANCE AT A POINT

77. Point Calculation Methods. The calculation of the illuminance at a point, whether on a horizontal, a vertical, or an inclined plane consists of two parts: the direct component and the reflected component. The total of these two components is the illuminance at the point in question.

Table 26-29 is a matrix of the most commonly used systems of computing the direct component. Although each of the methods can be used to make calculations under all the conditions if sufficient data are available, the x in the matrix indicates the conditions under which the method is easier to use.

78. Direct Component Illuminance. Most methods are based on the application of the *inverse-square law* (fc = cp/D^2) to data obtained from the candlepower distribution curve for

TABLE 26-29 Methods of Determining the Direct Component of Illuminance at a Point*

Source	Point			Linear			Area		
Plane	Horiz.	Vert.	Inclined	Horiz.	Vert.	Inclined	Horiz.	Vert.	Inclined
1. Inverse square	X	X	X						
2. Point-scale method†	X	X							
3. Angular coord.-DIC method‡				X	X				
4. IES-London-aspect factor method§				X	X	X			
5. Illumination charts and tables	X	X	X	X	X	X	X	X	X
6. Idealized source chart							X	X	
7. Configuration factor							X	X	

* The Determination of Illumination at a Point; *J. IES*, January 1974, vol. 3, p. 170.
† Goodbar, I.: New Methods for Point by Point Calculations; *Illum. Eng.*, January 1946, vol. 41, p. 39.
‡ Jones, J. R., LeVere, R. C., Ivanicki, N., and Chesebrough, P.: Angular Coordinate System for Computing Illumination at a Point; *Illum. Eng.*, April 1969, vol. 64, p. 296.
§ The Calculation of Direct Illumination from Linear Sources, *IES (London) Tech. Rep.* 11 — Illuminating Engineering Society, York House, Westminister Bridge Road, London, England.

TABLE 26-28 *(Continued)*

b. Luminance coefficients

ρ_{cc} →	80										70										50										30										10										WIDRC↓
ρ_w →	50		30		10		50		30		10		50		30		10		50		30		10		50		30		10		50		30		10		50		30		10		50		30		10		
CR ↓	Ceiling cavity luminance coefficients, for 20% effective floor-cavity reflectance (ρ_{fc} = 20)																																																	
0	.09	.09	.09	.08	.08	.08	.08	.08	.08	.08	.05	.05	.05	.05	.03	.03	.03	.03	.01	.01	.01	.01	.00	.00																										
1	.09	.08	.08	.07	.08	.07	.07	.06	.06	.05	.05	.05	.04	.04	.03	.02	.02	.02	.01	.01	.01	.01	.00	.00																										
2	.08	.07	.07	.06	.07	.06	.05	.05	.05	.04	.04	.04	.03	.03	.03	.03	.02	.02	.01	.01	.01	.01	.00	.00																										
3	.08	.06	.06	.04	.07	.05	.05	.04	.05	.03	.04	.03	.03	.03	.03	.02	.02	.02	.01	.01	.01	.01	.00	.00																										
4	.07	.05	.06	.04	.06	.04	.04	.03	.05	.03	.03	.03	.02	.02	.03	.02	.02	.02	.01	.01	.01	.01	.00	.00																										
5	.07	.04	.05	.04	.06	.04	.04	.02	.04	.03	.03	.02	.02	.02	.02	.02	.01	.01	.01	.01	.01	.01	.00	.00																										
6	.07	.04	.05	.02	.06	.04	.03	.02	.04	.02	.02	.02	.02	.01	.02	.01	.01	.01	.01	.01	.01	.01	.00	.00																										
7	.06	.04	.05	.02	.06	.03	.03	.02	.04	.02	.02	.02	.02	.01	.02	.01	.01	.01	.01	.01	.01	.01	.00	.00																										
8	.06	.03	.05	.02	.05	.03	.03	.02	.04	.02	.02	.02	.02	.01	.02	.01	.01	.01	.01	.01	.01	.01	.00	.00																										
9	.06	.03	.05	.01	.05	.03	.03	.02	.04	.02	.02	.02	.02	.01	.02	.01	.01	.01	.01	.01	.01	.01	.00	.00																										
10	.06	.03	.05	.01	.05	.03	.03	.01	.04	.02	.02	.02	.02	.01	.02	.01	.01	.01	.01	.01	.01	.01	.00	.00																										

ρ_{cc} →	80										70										50										30										10										WIDRC↓
ρ_w →	50		30		10		50		30		10		50		30		10		50		30		10		50		30		10		50		30		10		50		30		10		50		30		10		
CR ↓	Wall luminance coefficients, for 20% effective floor-cavity reflectance (ρ_{fc} = 20)																																																
0	.13	.07	.02	.12	.07	.02	.12	.07	.02	.11	.06	.02	.10	.05	.02	.10	.05	.02	.09	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.07	.04	.01	.07	.04	.01	.07	.04	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.15
1	.12	.07	.02	.12	.06	.02	.11	.06	.02	.11	.06	.02	.10	.05	.02	.10	.05	.02	.09	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.07	.04	.01	.07	.04	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.05	.03	.01	.14
2	.11	.06	.02	.11	.06	.02	.11	.06	.02	.10	.05	.02	.10	.05	.02	.10	.05	.02	.09	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.07	.04	.01	.07	.04	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.05	.03	.01	.13
3	.11	.06	.02	.10	.05	.02	.10	.05	.02	.10	.05	.02	.09	.04	.01	.09	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.07	.04	.01	.07	.04	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.05	.03	.01	.12
4	.10	.05	.01	.10	.05	.01	.09	.05	.01	.09	.04	.01	.09	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.07	.04	.01	.07	.04	.01	.07	.04	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.05	.03	.01	.11
5	.10	.05	.01	.09	.05	.01	.09	.04	.01	.09	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.07	.04	.01	.07	.04	.01	.07	.04	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.05	.03	.01	.10
6	.09	.04	.01	.09	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.07	.04	.01	.07	.04	.01	.07	.04	.01	.07	.04	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.05	.03	.01	.10
7	.09	.04	.01	.08	.04	.01	.08	.04	.01	.08	.04	.01	.07	.04	.01	.07	.04	.01	.07	.04	.01	.07	.04	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.05	.03	.01	.09
8	.08	.04	.01	.08	.04	.01	.07	.04	.01	.07	.04	.01	.07	.04	.01	.07	.04	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.05	.03	.01	.09
9	.08	.04	.01	.07	.04	.01	.07	.04	.01	.07	.04	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.05	.03	.01	.08
10	.07	.04	.01	.07	.04	.01	.07	.04	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.06	.03	.01	.05	.03	.01	.08

* ρ_{cc} = percent effective ceiling-cavity reflectance.
† ρ_w = percent wall reflectance.
‡ RCR = room-cavity ratio.
§ Spacing criterion times the mounting height above the work plane gives the spacing between luminaires, which approximately is the dividing point between reasonably acceptable horizontal illuminance and a noticeably poorer uniformity.
¶ Although it is recommended that luminance coefficients and wall direct radiation coefficients be published to three decimal places, only two are shown here. Three-decimal-place data should be obtained from manufacturers of actual luminaires used.

NOTE: 1 ft = 0.3048 m.

Appendix 3 - Cost Estimates/Energy Cost Development

COST ESTIMATE ANALYSIS

INVITATIOI ./CONTRACT NO.	EFFECTIVE PRICING DATE OCT/NOV 94	DATE PREPAF 11/11/94
PROJECT MILAN LIMITED ENERGY STUDY	☐ CODE A ☐ CODE B ☐ CODE C	DRAWING NO.	SHT OF
LOCATION MILAN, TENN	☐ OTHER	ESTIMATOR MLR	CHECKED BY

TASK DESCRIPTION	QUANTITY		LABOR				EQUIPMENT		MATERIAL		TOTAL	SHIPPING	
LAMP COSTS	No. of Units	Unit Meas	MH/Unit	Total Hrs	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost		Unit WT	Total WT
I100, 100A23	1	ea	0.28	0.28	12.50	3.50			2.54	2.54	6.04		
								x 120%		(OH&P)	7.25		
I200, 200PS30	1	ea	0.36	0.36	12.50	4.50			3.81	3.81	8.31		
								x 120%		(OH&P)	9.97		
I300, 300M/99	1	ea	0.44	0.44	12.50	5.50			6.35	6.35	11.85		
								x 120%		(OH&P)	14.22		
MV10, HR100A38	1	ea	0.5	0.5	14.10	1.35			15.82	15.82	23.17		
								x 120%		(OH&P)	27.80		
MH10, MXR10/U/MED	1	ea	0.5	0.5	14.10	1.35			46.69	46.69	54.04		
								x 120%		(OH&P)	64.85		
MH10, MXR100	1	ea	0.5	0.5	14.10	1.35			49.23	49.23	56.58		
								x 120%		(OH&P)	67.90		
HP50, LV50	1	ea	0.5	0.5	14.10	1.35			26.85	26.85	36.20		
								x 120%		(OH&P)	43.44		
HP10, LV10	1	ea	0.5	0.5	14.10	1.35			25.65	25.65	32.00		
								x 120%		(OH&P)	39.60		
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COST ESTIMATE ANALYSIS

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PROJECT MILAN LIMITED ENERGY STUDY | ☐ CODE A ☐ CODE B ☐ CODE C | DRAWING NO. | SHT OF

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TASK DESCRIPTION	QUANTITY		LABOR				EQUIPMENT		MATERIAL		TOTAL	SHIPPING	
LAMP COSTS	No. of Units	Unit Meas	MH/Unit	Total Hrs	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost		Unit WT	Total WT
HP10, LV100	1	ea	0.5	0.5	14.70	7.35			26.85	26.85	34.20		
								x 120%		(OH&P)	43.44		
F212, F40	2	ea	0.19	0.38	12.50	4.80			5.30	10.60	15.40		
								x 120%		(OH&P)	18.48		
F312, F40	3	ea	0.14	0.42	12.50	5.30			5.30	15.90	21.20		
								x 120%		(OH&P)	25.43		
F206, F32	2	ea	0.21	0.42	12.50	5.30			9.22	18.45	11.75		
								x 120%		(OH&P)	14.10		
F306, F32	3	ea	0.15	0.44	12.50	5.55			9.22	9.66	15.23		
								x 120%		(OH&P)	18.28		
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COST ESTIMATE ANALYSIS

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DRAWING NO.

SHT OF

LOCATION: MILAN, TENN

☐ OTHER

ESTIMATOR: MLR

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TASK DESCRIPTION	QUANTITY		LABOR				EQUIPMENT		MATERIAL		TOTAL	SHIPPING	
BALLAST COSTS	No. of Units	Unit Meas	MH / Unit	Total Hrs	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost		Unit WT	Total WT
I100	—					—				—	0		
I200	—					—				—	0		
I300	—					—				—	0		
MV10, GWI	1	ea	1	1	24.50	24.50			90.50	90.50	115.00		
								× 120%		(OH&P)	136.00		
MH10 REACTOR	1	ea	1	1	21.50	21.50			122.50	122.50	150.00		
								× 120%		(OH&P)	180.00		
MH10 REACTOR	1	ea	1	1	23.50	23.50			126.67	126.67	154.17		
								× 120%		(OH&P)	185.00		
HP50 REG/VAC	1	ea	1	1	23.50	23.50			126.50	126.50	150.00		
								× 120%		(OH&P)	180.00		
HP10 REG/VAC	1	ea	1	1	23.50	23.50			131.50	131.50	155.00		
								× 120%		(OH&P)	186.00		
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COST ESTIMATE ANALYSIS

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LOCATION: MILAN, TENN | ☐ OTHER | ESTIMATOR: MLR | CHECKED BY

TASK DESCRIPTION	QUANTITY		LABOR				EQUIPMENT		MATERIAL		TOTAL	SHIPPING	
BALLAST COSTS	No. of Units	Unit Meas	MH / Unit	Total Hrs	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost		Unit WT	Total WT
HP100 REG/LAG	1	ea	1	1	23.50	23.50			136.50	136.50	160.00		
								x 120%		(OH&P)	192.00		
F212, RQMS	1	ea	1	1	23.50	23.50			36.50	36.50	60.00		
								x 120%		(OH&P)	72.00		
F312, RQM2S	1	ea	1	1	23.50	23.50			36.50	36.50	60.00		
HMI	1	ea	1	1	5.00	5.00			10.00	10.00	15.00		
											75.00		
								x 120%		(OH&P)	90.00		
F206, RK2S	1	ea	1	1	23.50	23.50			44.50	44.50	68.00		
								x 120%		(OH&P)	81.60		
F306, RK2S	1	ea	1	1	23.50	23.50			44.50	44.50	68.00		
RK1S	1	ea	1	1	5.00	5.00			13.33	13.33	18.33		
											466.33		
								x 120%		(OH&P)	103.60		
TOTAL THIS SHEET													

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COST ESTIMATE ANALYSIS

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LOCATION MILAN, TENN	☐ OTHER	ESTIMATOR MLR	CHECKED BY

TASK DESCRIPTION	QUANTITY		LABOR				EQUIPMENT		MATERIAL		TOTAL	SHIPPING	
FIXTURE COSTS	No. of Units	Unit Meas	MH / Unit	Total Hrs	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost		Unit WT	Total WT
I100													
DEMO OLD	1	ea	1.143	1.143	27.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	27.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.198	1.198	27.56	33.00			383.69	383.69	416.69		
INSTALL LAMP	1	ea	0.25	0.25	27.56	6.89			4.00	4.00	10.89		
											590.58		
								× 120%		(OH&P)	708.70		
I200													
DEMO OLD	1	ea	1.143	1.143	27.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	27.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.198	1.198	27.56	33.00			383.69	383.69	416.69		
INSTALL LAMP	1	ea	0.25	0.25	27.56	6.89			5.30	5.30	12.19		
											591.88		
								× 120%		(OH&P)	710.26		
I300													
DEMO OLD	1	ea	1.143	1.143	27.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	27.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.198	1.198	27.56	33.00			412.62	412.62	445.62		
INSTALL LAMP	1	ea	0.25	0.25	27.56	6.89			9.20	9.20	16.09		
											637.71		
								× 120%		(OH&P)	765.25		
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TASK DESCRIPTION	QUANTITY		LABOR				EQUIPMENT		MATERIAL		TOTAL	SHIPPING	
FIXTURE COSTS	No. of Units	Unit Meas	MH / Unit	Total Hrs	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost		Unit WT	Total WT
MV10													
DEMO OLD	1	ea	1.143	1.143	27.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	27.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.196	1.196	45.06	54.00			165.17	165.17	219.17		
INSTALL LAMP	1	ea	0.25	0.25	27.56	6.89			39.68	39.68	46.57		
											426.74		
								× 120%		(OH&P)	514.49		
MH10													
DEMO OLD	1	ea	1.143	1.143	27.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	27.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.196	1.196	45.06	54.00			171.61	171.61	231.61		
INSTALL LAMP	1	ea	0.25	0.25	27.56	6.89			57.21	57.21	64.10		
											456.91		
								× 120%		(OH&P)	550.76		
MH10													
DEMO OLD	1	ea	1.143	1.143	27.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	27.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.196	1.196	45.06	54.00			190.56	190.56	244.56		
INSTALL LAMP	1	ea	0.25	0.25	27.56	6.89			62.21	62.21	69.10		
											476.66		
								× 120%		(OH&P)	572.02		
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TASK DESCRIPTION	QUANTITY		LABOR				EQUIPMENT		MATERIAL		TOTAL	SHIPPING	
FIXTURE COSTS	No. of Units	Unit Meas	MH / Unit	Total Hrs	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost		Unit WT	Total WT
HP10													
DEMO OLD	1	ea	1.143	1.143	27.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	27.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.196	1.196	45.06	54.00			228.69	228.69	282.69		
INSTALL LAMP	1	ea	1.143	1.143	27.56	16.89			61.53	61.53	100.42		
											514.11		
								× 120%		(OH&P)	616.93		
HP10													
DEMO OLD	1	ea	1.143	1.143	27.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	27.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.196	1.196	45.06	54.00			235.04	235.04	289.04		
INSTALL LAMP	1	ea	1.143	1.143	27.56	16.89			66.53	66.53	17.42		
											527.46		
								× 120%		(OH&P)	633.55		
HP30													
DEMO OLD	1	ea	1.143	1.143	27.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	27.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.196	1.196	45.06	54.00			222.34	222.34	276.34		
INSTALL LAMP	1	ea	1.143	1.143	27.56	16.89			56.53	56.53	63.42		
											502.76		
								× 120%		(OH&P)	603.31		
TOTAL THIS SHEET													

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TASK DESCRIPTION	QUANTITY		LABOR				EQUIPMENT		MATERIAL		TOTAL	SHIPPING	
FIXTURE COSTS	No. of Units	Unit Meas	MH/Unit	Total Hrs	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost		Unit WT	Total WT
F212													
DEMO OLD	1	ea	1.143	1.143	21.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	21.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.442	1.442	45.08	65.00			355.14	355.14	420.14		
INSTALL LAMPS	2	ea	0.25	0.50	21.56	13.18			4.00	8.00	21.18		
											605.12		
								x 115%		(OH&P)	696.39		
F312													
DEMO OLD	1	ea	1.143	1.143	21.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	21.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.442	1.442	45.08	65.00			381.15	381.15	446.15		
INSTALL LAMPS	3	ea	0.25	0.75	21.56	20.07			4.00	12.00	32.07		
											641.82		
								x 115%		(OH&P)	738.09		
F206													
DEMO OLD	1	ea	1.143	1.143	21.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	21.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.442	1.442	45.08	65.00			355.14	355.14	420.14		
INSTALL LAMPS	2	ea	0.25	0.50	21.56	13.18			4.00	8.00	21.18		
											605.12		
								x 115%		(OH&P)	696.39		
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COST ESTIMATE ANALYSIS

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DRAWING NO.

SHT OF

LOCATION: MILAN, TENN

ESTIMATOR: MLR

CHECKED BY

TASK DESCRIPTION	QUANTITY		LABOR				EQUIPMENT		MATERIAL		TOTAL	SHIPPING	
	No. of Units	Unit Meas	MH / Unit	Total Hrs	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost		Unit WT	Total WT
FIXTURE COSTS													
F308													
DEMO OLD	1	ea	1.143	1.143	21.56	31.50			—	—	31.50		
EXTEND WIRING	1	ea	1.143	1.143	21.56	31.50			100.00	100.00	131.50		
INSTALL NEW	1	ea	1.442	1.442	45.08	65.00			381.15	381.15	446.15		
INSTALL LAMPS	3	ea	0.25	0.75	21.56	20.67			4.00	12.00	32.67		
											641.82		
								x 115%			738.09		
TOTAL THIS SHEET													

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COST ESTIMATE ANALYSIS

DATE: OCT/NOV 94 | 11/11/94

PROJECT: MILAN LIMITED ENERGY STUDY

LOCATION: MILAN, TENN

☐ CODE A ☐ CODE B ☐ CODE C

☐ OTHER _____

DRAWING NO.

SHT OF

ESTIMATOR: MLR

CHECKED BY

TASK DESCRIPTION	QUANTITY		LABOR				EQUIPMENT		MATERIAL		TOTAL	SHIPPING	
LENS CLEANING COSTS	No. of Units	Unit Meas	MH/Unit	Total Hrs	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost		Unit WT	Total WT
I100	1	ea	0.51	0.51	23.50	12.10			1.00		13.10		
								x 120%		(OH&P)	15.72		
I200	1	ea	0.51	0.51	23.50	12.10			1.00		13.10		
								x 120%		(OH&P)	15.72		
I300	1	ea	0.51	0.51	23.50	12.10			1.00		13.10		
								x 120%		(OH&P)	15.72		
MV10	1	ea	0.86	0.86	23.50	20.80			1.00		21.80		
								x 120%		(OH&P)	26.16		
MH10	1	ea	0.86	0.86	23.50	20.80			1.00		21.80		
								x 120%		(OH&P)	26.16		
HP50	1	ea	0.86	0.86	23.50	20.80			1.00		21.80		
								x 120%		(OH&P)	26.16		
HP10	1	ea	0.86	0.86	23.50	20.80			1.00		21.80		
								x 120%		(OH&P)	26.16		
TOTAL THIS SHEET													

PAGE

V-47

COST ESTIMATE ANALYSIS

INVITATIO! ./CONTRACT NO.		EFFECTIVE PRICING DATE OCT/NOV 94	DATE PREPAF 11/11/94
PROJECT MILAN LIMITED ENERGY STUDY	☐ CODE A ☐ CODE B ☐ CODE C	DRAWING NO.	SHT OF
LOCATION MILAN, TENN	☐ OTHER	ESTIMATOR MLR	CHECKED BY

TASK DESCRIPTION	QUANTITY		LABOR				EQUIPMENT		MATERIAL		TOTAL	SHIPPING	
LENS CLEANING COSTS	No. of Units	Unit Meas	MH/Unit	Total Hrs	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost		Unit WT	Total WT
F212	1	ea	0.6	0.6	23.50	14.22			1.50		15.72		
								x 120%		(OH&P)	18.86		
F312	1	ea	0.6	0.6	23.50	14.22			1.50		15.72		
								x 120%		(OH&P)	18.86		
F208	1	ea	0.6	0.6	23.50	14.22			1.50		15.72		
								x 120%		(OH&P)	18.86		
F306	1	ea	0.6	0.6	23.50	14.22			1.50		15.72		
								x 120%		(OH&P)	18.86		
TOTAL THIS SHEET													

8A-1

SUMMARY OF NET AMOUNTS APPLICABLE IN CALCULATING BILLS FOR CUSTOMERS SERVED UNDER TVA RESALE RATE SCHEDULES

MILAN DEPARTMENT OF PUBLIC UTILITIES

RESIDENTIAL RATE SCHEDULE - RS

Customer Charge -	
per delivery point per month	$3.73
Energy Charges - per kWh -	
First 800 kWh per month	0.05340
Additional kWh per month	0.05340

GENERAL POWER RATE SCHEDULE - GSA

GSA-1 (0-50 kW)

Customer Charge -	
per delivery point per month	7.39
Energy Charges - per kWh	0.05806

GSA-2 (51-1,000 kW)

Customer Charge -	
per delivery point per month	7.39
Demand Charge - per kW per month -	
First 50 kW	0.00
Additional kW	8.06
Energy Charge - per kWh -	
First 15,000 kWh	0.05806
Additional kWh	0.03170

GSA-3 (1,001-5,000 kW)

Customer Charge -	
per delivery point per month	7.39
Demand Charge - per kW per month -	
First 1,000 kW	7.63
Next 1,500 kW	8.67
Excess over 2,500 kW	8.67
Excess Demand Charge -	
Higher of 2,500 kW or contract demand	8.67
Energy Charge - per kWh	0.03124

GENERAL POWER RATE SCHEDULE - GSB
(5,001-15,000 kW)

Customer Charge -	
per delivery point per month	1500.00
Demand Charges - per kW per month -	9.78
Excess Demand	9.78
Energy Charge - per kWh -	
First 620 Hours Use of Demand	0.02637
Additional kWh	0.02152

GENERAL POWER RATE SCHEDULE - GSC
(15,001-25,000 kW)

Customer Charge -	
per delivery point per month	1500.00
Demand Charge - per kW per month -	9.68
Excess Demand	9.68
Energy Charge - per kWh	
First 620 Hours Use of Demand	0.02637
Additional kWh	0.02152

GENERAL POWER RATE SCHEDULE - GSD
(over 25,000 kW)

Customer Charge -	
per delivery point per month	1500.00
Demand Charge - per kW per month -	11.78
Excess Demand	11.78
Energy Charge - per kWh	0.02114

FACILITIES RENTAL

General Power - over 5,000 kW	
46 kV to 161 kV delivery - per kW	0.36000
Less than 46 kV delivery - per kW	
First 10,000 kW	0.93000
Over 10,000 kW	0.73000

OUTDOOR LIGHTING

		w/pole
175W Mercury Vapor	4.70	5.70
400W Mercury Vapor	9.66	10.66
1000W Mercury Vapor	21.70	22.70
100W High Pressure Sodium	5.02	6.02
150W High Pressure Sodium	6.02	7.02
400W High Pressure Sodium	11.87	12.87

NOTES:

a. If the higher of the customer's currently effective contract demand or its highest billing demand during the latest 12-month period is greater than 50 kW but not more than 1,000 kW.

b. If the customer's billing demand is less than 50 kW and its energy takings for any month during the latest 12-month period exceeds 15,000 kWh.

REFLECTS BASE RATES EFFECTIVE JUNE, 1993

AFFILIATED ENGINEERS SE, INC.
3300 SW Archer Road
Gainesville, Florida 32608
(904) 376-5500
FAX (904) 375-3479

Made By:	Date:	Job No:
M.L.R.	8/8/94	93243-20
Checked By:	Date:	Sheet No: ____ of ____

Calculations For:
MILAN - LTD. ENERGY STUDY

ELECTRICAL BILL

GENERAL POWER RATE SCHEDULE / GSA-3

- CUSTOMER CHARGE (PER MONTH) — $ 7.39
- DEMAND CHARGE (PER KW PER MONTH) — $ 8.67
- ENERGY CHARGE (PER KWH) — $ 0.03124

MONTHLY FACILITY KWH CONSUMPTION TOTALS

	1991	1992	1993	1994
OCTOBER	878,400	910,435	881,841	907,560
NOVEMBER	982,800	1,108,176	1,006,489	1,140,328
DECEMBER	990,000	1,042,150	1,133,530	1,130,631
JANUARY	1,152,000	1,190,739	1,143,604	1,392,066
FEBRUARY	1,209,395	1,148,210	1,078,568	1,097,988
MARCH	1,028,783	1,142,213	1,239,232	1,160,560
APRIL	900,210	1,065,600	1,029,667	904,796
MAY	936,681	954,000	922,534	874,558
JUNE	981,408	985,352	1,002,084	1,061,723
JULY	1,028,758	1,074,783	1,123,791	980,536
AUGUST	1,109,647	1,045,508	1,125,736	
SEPTEMBER	1,015,992	935,891	918,472	
TOTALS	12,214,074	12,603,057	12,605,548	10,650,746

Appendix 4 - Scope of Work

CESAM-EN-CM

RECEIVED
Affiliated Engineers SE, Inc.
MAY 19 1994
Route to CO 5/19/94
CC:MR

May 1994

GENERAL SCOPE OF WORK

FOR

FY93 LIMITED ENERGY STUDY

MILAN ARMY AMMUNITION PLANT, TENNESSEE

Performed as part of the

ENERGY ENGINEERING ANALYSIS PROGRAM (EEAP)

SCOPE OF WORK

FOR

FY93 LIMITED ENERGY STUDY

MILAN ARMY AMMUNITION PLANT, TN

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1. BRIEF DESCRIPTION OF WORK

2. GENERAL

3. PROJECT MANAGEMENT

4. SERVICES AND MATERIALS

5. PROJECT DOCUMENTATION

    5.1 ECIP Projects
    5.2 Non-ECIP Projects
    5.3 Infeasible ECOs

6. DETAILED SCOPE OF WORK

7. WORK TO BE ACCOMPLISHED

    7.1 Perform a Limited Site Survey
    7.2 Evaluate Selected ECOs
    7.3 Combine ECOs into Recommended Projects
    7.4 Submittals, Presentations and Reviews

ANNEXES

A - DETAILED SCOPE OF WORK

B - EXECUTIVE SUMMARY GUIDELINE

C - REQUIRED DD FORM 1391 DATA

3.6 Records

3.6.1 The AE shall provide a record of all significant conferences, meetings, discussions, verbal directions, telephone conversations, etc., with Government representative(s) relative to this contract in which the AE and/or designated representative(s) thereof participated. These records shall be dated and shall identify the contract number, and modification number if applicable, participating personnel, subject discussed and conclusions reached. The AE shall forward to the Contracting Officer within ten calendar days, a reproducible copy of the records.

3.6.2 The AE shall provide a record of requests for and/or receipt of Government-furnished material, data, documents, information, etc., which if not furnished in a timely manner, would significantly impair the normal progression of the work under this contract. The records shall be dated and shall identify the contract number and modification number, if applicable. The AE shall forward to the Contracting Officer within ten calendar days, a reproducible copy of the record of request or receipt of material.

3.7 Interviews. The AE and the Government's representative shall conduct entry and exit interviews with the Facilities Engineering Division before starting work at the installation and after completion of the field work. The Government's representative shall schedule the interviews at least one week in advance.

3.7.1 Entry. The entry interview shall describe the intended procedures for the survey and shall be conducted prior to commencing work at the facility. As a minimum, the interview shall cover the following points:

a. Schedules.

b. Names of energy analysts who will be conducting the site survey.

c. Proposed working hours.

d. Support requirements from the Facilities Engineering Division.

3.7.2 Exit. The exit interview shall briefly describe the items surveyed and probable areas of energy conservation. The interview shall also solicit input and advice from the Facilities Engineering Division.

4. SERVICES AND MATERIALS. All services, materials (except those specifically enumerated to be furnished by the Government), labor, supervision and travel necessary to perform the work and render the data required under this contract are included in the lump sum price of the contract.

5. PROJECT DOCUMENTATION. All energy conservation opportunities which the AE has considered shall be included in one of the following categories and presented in the report as such:

5.1 ECIP Projects. To qualify as an ECIP project, an ECO, or several ECOs which have been combined, must have a construction cost estimate greater than $300,000, a Savings to Investment Ratio greater than 1.25 and a simple payback period of less than ten years. For ECAM projects, the $300,000 limitation may not apply; in such cases, the AE shall check with the installation for guidance. The overall project and each discrete part of the project shall have an SIR greater than 1.25. All projects meeting the above criteria shall be arranged as specified in paragraph 2.5.1 and shall be provided with programming documentation. Programming documentation shall consist of a DD Form 1391, life cycle cost analysis (LCCA) summary sheet(s) (with necessary backup data to verify the numbers presented), and a Project Development Brochure (PDB). A life cycle cost analysis summary sheet shall be developed for each ECO and for the overall project when more than one ECO are combined. The energy savings for projects consisting of multiple ECOs must take into account the synergistic effects of the individual ECOs. For projects and ECOs reevaluated from previous studies, the backup data shall consist of copies of the original calculations and analysis, with new pages revising the original calculations and analysis. In addition, the backup data shall include as much of the following as is available: the increment of work under which the project or ECO was developed in the previous study, title(s) of the project(s), the energy to cost (E/C) ratio, the benefit to cost (B/C) ratio, the current working estimate (CWE), and the payback period. The purpose of this information is to provide a means to prevent duplication of projects in any future reports.

5.2 Non-ECIP Projects. Projects which do not meet ECIP criteria with regard to cost estimate or payback period, but which have an SIR greater than 1.25 shall be documented. Projects or ECOs in this category shall be arranged as specified in paragraph 2.5.2 and shall be provided with the following documentation: the life cycle cost analysis (LCCA) summary sheet completely filled out, a description of the work to be accomplished, backup data for the LCCA, ie, energy savings calculations and cost estimate(s), and the simple payback period. The energy savings for projects consisting of multiple ECOs must take into account the synergistic effects of the individual ECOs. Low Cost/No Cost projects fall into this category. These are projects which the Facilities Engineering Division (FE) can perform using his resources. Documentation shall be as required by the FE.

5.3 Infeasible ECOs. All ECOs which the AE has considered but which are not feasible, shall be documented in the report with reasons and justifications showing why they were rejected.

6. DETAILED SCOPE OF WORK. The Detailed Scope of Work is contained in Annex A.

7. WORK TO BE ACCOMPLISHED.

7.1 Perform a Limited Site Survey. The AE shall obtain all necessary data to evaluate the ECOs or projects by conducting a site survey. The AE shall document his site survey on forms developed for the survey, or standard forms, and submit these completed forms as part of the report. All test and/or measurement equipment shall be properly calibrated prior to its use.

7.2 Evaluate Selected ECOs. The AE shall analyze the ECOs listed in Annex A. These ECOs shall be analyzed in detail to determine their feasibility. Savings to Investment Ratios (SIRs) shall be determined using current ECIP guidance. The AE shall provide all data and calculations needed to support the recommended ECO. All assumptions and engineering equations shall be clearly stated. Calculations shall be prepared showing how all numbers in the ECO were figured. Calculations shall be an orderly step-by-step progression from the first assumption to the final number. Descriptions of the products, manufacturers catalog cuts, pertinent drawings and sketches shall also be included. A life cycle cost analysis summary sheet shall be prepared for each ECO and included as part of the supporting data.

7.3 Combine ECOs Into Recommended Projects. During the Interim Review Conference, as outlined in paragraph 7.4.1, the AE will be advised of the FE's preferred packaging of recommended ECOs into projects for implementation. Some projects may be a combination of several ECOs, and others may contain only one. These projects will be evaluated and arranged as outlined in paragraphs 5.1 and 5.2. Energy savings calculations shall take into account the synergistic effects of multiple ECOs within a project and the effects of one project upon another. The results of this effort will be reported in the Final Submittal per par 7.4.2.

7.4 Submittals, Presentations and Reviews. The work accomplished shall be fully documented by a comprehensive report. The report shall have a table of contents and shall be indexed. Tabs and dividers shall clearly and distinctly divide sections, subsections, and appendices. All pages shall be numbered. Names of the persons primarily responsible for the project shall be included. The AE shall give a formal presentation of the interim submittal to installation, command, and other Government personnel. Slides or view graphs showing the results of the study to date shall be used during the presentation. During the presentation, the personnel in attendance shall be given ample opportunity to ask questions and discuss any changes deemed necessary to the study. A review conference will be conducted the same day, following the presentation. Each comment presented at the review conference will be discussed and resolved or action items assigned. It is anticipated that the presentation and review conference will require approximately one working day. The presentation and review

conference will be at the installation on the date agreeable to the Facilities Engineering Division, the AE and the Government's representative. The Contracting Officer may require a resubmittal of any document(s), if such document(s) are not approved because they are determined by the Contracting Officer to be inadequate for the intended purpose.

7.4.1 Interim Submittal. An interim report shall be submitted for review after the field survey has been completed and an analysis has been performed on all of the ECOs. The report shall indicate the work which has been accomplished to date, illustrate the methods and justifications of the approaches taken and contain a plan of the work remaining to complete the study. Calculations showing energy and dollar savings, SIR, and simple payback period of all the ECOs shall be included. The results of the ECO analyses shall be summarized by lists as follows:

a. All ECOs eliminated from consideration shall be grouped into one listing with reasons for their elimination as discussed in par 5.3.

b. All ECOs which were analyzed shall be grouped into two listings, recommended and non-recommended, each arranged in order of descending SIR. These lists may be subdivided by building or area as appropriate for the study.

The AE shall submit the Scope of Work and any modifications to the Scope of Work as an appendix to the report. A narrative summary describing the work and results to date shall be a part of this submittal. At the Interim Submittal and Review Conference, the Government's and AE's representatives shall coordinate with the Facilities Engineering Division to provide the AE with direction for packaging or combining ECOs for programming purposes and also indicate the fiscal year for which the programming or implementation documentation shall be prepared. The survey forms completed during this audit shall be submitted with this report. The survey forms only may be submitted in final form with this submittal. They should be clearly marked at the time of submission that they are to be retained. They shall be bound in a standard three-ring binder which will allow repeated disassembly and reassembly of the material contained within.

7.4.2 Final Submittal. The AE shall prepare and submit the final report when all sections of the report are 100% complete and all comments from the interim submittal have been resolved. The AE shall submit the Scope of Work for the study and any modifications to the Scope of Work as an appendix to the submittal. The report shall contain a narrative summary of conclusions and recommendations, together with all raw and supporting data, methods used, and sources of information. The report shall integrate all aspects of the study. The recommended projects, as determined in accordance with paragraph 5, shall be presented in order of priority by SIR. The lists of ECOs specified in paragraph 7.4.1 shall also be included for continuity. The final report and all appendices shall be bound in standard three-ring binders which will allow

repeated disassembly and reassembly. The final report shall be arranged to include:

a. An Executive Summary to give a brief overview of what was accomplished and the results of this study using graphs, tables and charts as much as possible (See Annex B for minimum requirements).

b. The narrative report describing the problem to be studied, the approach to be used, and the results of this study.

c. Documentation for the recommended projects (includes LCCA Summary Sheets).

d. Appendices to include as a minimum:

1) Energy cost development and backup data

2) Detailed calculations

3) Cost estimates

4) Computer printouts (where applicable)

5) Scope of Work

ANNEX A

DETAILED SCOPE OF WORK

FY93 LIMITED ENERGY STUDY, MILAN AAP, TENNESSEE

1. The work in this study is to evaluate lighting in production facilities. This is described in more detail in paragraph 5 below.

2. The AE shall provide all necessary effort, services, and materials required to accomplish the work specified.

3. Milan AAP is a government-owned, contractor-operated facility. The operating contractor is Martin-Marrietta Operating Systems (MMOS). The installation representative for this contract will be Mr. Brad McCready, Energy Manager, Facilities Engineering Division. The operating contractor's point of contact will be Mr. Harold Thompson.

4. Completion and Payment Schedule: The following schedule shall be used as a guide in approving payments on this contract. The final report for this study shall be due not later than 180 days after Notice to Proceed.

MILESTONE	PERCENT OF CONTRACT AMOUNT AUTHORIZED FOR PAYMENT
Entry Interview	10
Completion of Field Work	25
Receipt of Interim Submittal	75
Completion of Interim Presentation & Review	85
Receipt of Final Report	100

5. Perform the evaluations described below where noted by an "X" for the buildings listed in the LIGHTING ECO MATRIX at the end of this annex:

a. Production Facilities: Evaluate measures to improve the effectiveness of the existing lighting systems. This evaluation should consider not just a one-for-one replacement of existing lamps or fixtures with more efficient lamps or fixtures. It should consider all factors that contribute to the effectiveness of the system, e.g., wall and ceiling finishes, task lighting, shadows, luminance ratios, spectral distribution, as well as energy. Safety, of course, is of the greatest importance in these areas. Productivity improvements may be claimed in the life cycle cost analysis if supported by experience and quantifiable data.

b. Restrooms: Evaluate adequacy and efficiency of existing lighting and the use of occupancy sensors.

c. Ramps: Evaluate adequacy and efficiency of existing lighting and the use of occupancy sensors.

6. Government-Furnished Information: The following documents will be furnished to the AE:

a. As-built drawings of buildings involved in lighting studies (available for reproduction at Milan AAP)

b. ETL 1110-3-282, Energy Conservation

c. Energy Conservation Investment Program (ECIP) Guidance, dated 10 January 1994.

d. TM 5-800-2, Cost Estimates, Military Construction.

e. AR 415-15, 1 Jan 84, Military Construction, Army (MCA) Program Development

f. The latest MCP Index.

g. Architectural & Engineering Instructions, Design Criteria; Chapter 12, Electrical Criteria, 9 December 1991.

7. A computer program titled Life Cycle Costing in Design (LCCID) is available from the BLAST Support Office in Urbana, Illinois for a nominal fee. This computer program can be used for performing the economic calculations for ECIP and non-ECIP ECOs. The AE is encouraged to obtain and use this computer program. The BLAST Support Office can be contacted at 144 Mechanical Engineering Building, 1206 West Green Street, Urbana, Illinois 61801. The telephone number is (217) 333-3977 or (800) 842-5278.

8. Direct Distribution of Submittals: The AE shall make direct distribution of correspondence, minutes, report submittals, and responses to comments as indicated by the schedule on the following page:

DISTRIBUTION SCHEDULE

AGENCY	CORRESPONDENCE	EXECUTIVE SUMMARIES	REPORTS	FIELD NOTES
Commander Milan Army Ammunition Plant ATTN: SMCMI-EN (McCready) Milan, TN 38358	1	3	3	1*
Commander US AMC Installation and Service Activity ATTN: AMXEN-C (Mr Nache) Rock Island, IL 61299-7190	-	1	1	-
Commander US Army Corps of Engineers ATTN: CEMP-ET (Mr Gentil) 20 Massachusetts Avenue NW Washington, DC, 20314 - 1000	-	1	-	-
Commander USAED, South Atlantic ATTN: CESAD-EN-TE (Mr Baggette) 77 Forsyth Street, SW Atlanta, GA 30335 - 6801	-	1	1	-
Commander USAED, Mobile ATTN: CESAM-EN-CM (Battaglia) PO Box 2288; Mobile, AL 36628	1	2	2	1*
Commander US Army Logistics Evaluation Agency ATTN: LOEA-PL (Mr Keath) New Cumberland Army Depot New Cumberland, PA, 17070 - 5007	-	1	-	-

* Field Notes submitted in final form at interim submittal.

LIGHTING ECO MATRIX

BLDG	SQ FEET	FUNCTION	PRODUCTION	RAMP	RESTROOM
A-2	15,050	Production Facility	X	X	X
A-3	19,260	Production Facility	X	X	X
A-4	30,750	Production Facility	X	X	X
A-6	640	Production Facility	X	X	

BLDG	SQ FEET	FUNCTION	PRODUCTION	RAMP	RESTROOM
B-10	960	Production Facility	X	X	X
B-12	3,237	Production Facility	X	X	X
B-14	23,050	Production Facility	X	X	X
B-18	15,050	Production Facility	X	X	X

BLDG	SQ FEET	FUNCTION	PRODUCTION	RAMP	RESTROOM
D-3	19,866	Production Facility	X	X	X
D-10	14,350	Production Facility	X	X	X
D-16	7,568	Production Facility	X		X
D-41	10,510	Production Facility	X	X	X

BLDG	SQ FEET	FUNCTION	PRODUCTION	RAMP	RESTROOM
H-81	4,083	Production Facility	X	X	X
H-111	3,660	Production Facility	X	X	X
H-115	8,820	Production Facility	X	X	X

BLDG	SQ FEET	FUNCTION	PRODUCTION	RAMP	RESTROOM
O-1	3,776	Production Facility	X	X	X
O-3	3,304	Production Facility	X	X	
O-4	5,734	Production Facility	X	X	X

BLDG	SQ FEET	FUNCTION	PRODUCTION	RAMP	RESTROOM
X-8	6,550	Production Facility	X	X	X
X-14	20,050	Production Facility	X	X	X
X-18	17,100	Production Facility	X	X	X
X-26	288	Production Facility	X	X	
X-27	7,050	Production Facility	X	X	
X-41	13,552	Production Facility	X	X	X

ANNEX B

EXECUTIVE SUMMARY GUIDELINE

1. Introduction.

2. Building Data (types, number of similar buildings, sizes, etc.)

3. Present Energy Consumption of Buildings or Systems Studied.

   o Total Annual Energy Used.

   o Source Energy Consumption.

   Electricity - KWH, Dollars, BTU
   Fuel Oil - GALS, Dollars, BTU
   Natural Gas - THERMS, Dollars, BTU
   Propane - GALS, Dollars, BTU
   Other - QTY, Dollars, BTU

4. Reevaluated Projects Results.

5. Energy Conservation Analysis.

   o ECOs Investigated.

   o ECOs Recommended.

   o ECOs Rejected. (Provide economics or reasons)

   o ECIP Projects Developed. (Provide list)*

   o Non-ECIP Projects Developed. (Provide list)*

   o Operational or Policy Change Recommendations.

   * Include the following data from the life cycle cost analysis summary sheet: the cost (construction plus SIOH), the annual energy savings (type and amount), the annual dollar savings, the SIR, the simple payback period and the analysis date.

6. Energy and Cost Savings.

   o Total Potential Energy and Cost Savings.

   o Percentage of Energy Conserved.

   o Energy Use and Cost Before and After the Energy Conservation Opportunities are Implemented.

ANNEX C

REQUIRED DD FORM 1391 DATA

To facilitate ECIP project approval, the following supplemental data shall be provided:

a. In title block clearly identify projects as "ECIP."

b. Complete description of each item of work to be accomplished including quantity, square footage, etc.

c. A comprehensive list of buildings, zones, or areas including building numbers, square foot floor area, designated temporary or permanent, and usage (administration, patient treatment, etc.).

d. List references, and assumptions, and provide calculations to support dollar and energy savings, and indicate any added costs.

(1) If a specific building, zone, or area is used for sample calculations, identify building, zone or area, category, orientation, square footage, floor area, window and wall area for each exposure.

(2) Identify weather data source.

(3) Identify infiltration assumptions before and after improvements.

(4) Include source of expertise and demonstrate savings claimed. Identify any special or critical environmental conditions such as pressure relationships, exhaust or outside air quantities, temperatures, humidity, etc.

e. Claims for boiler efficiency improvements must identify data to support present properly adjusted boiler operation and future expected efficiency. If full replacement of boilers is indicated, explain rejection of alternatives such as replace burners, non-functioning controls, etc. Assessment of the complete existing installation is required to make accurate determinations of required retrofit actions.

f. Lighting retrofit projects must identify number and type of fixtures, and wattage of each fixture being deleted and installed. New lighting shall be only of the level to meet current criteria. Lamp changes in existing fixtures is not considered an ECIP type project.

g. An ECIP life cycle cost analysis summary sheet as shown in the ECIP Guidance shall be provided for the complete project and for each discrete part included in the project. The SIR is applicable to all segments of the project. Supporting documentation consisting of basic engineering and economic calculations showing how savings were determined shall be included.

h. The DD Form 1391 face sheet shall include, for the complete project, the annual dollar and MBTU savings, SIR, simple amortization period and a statement attesting that all buildings and retrofit actions will be in active use throughout the amortization period.

i. The calendar year in which the cost was calculated shall be clearly shown on the DD Form 1391.

j. For each temporary building included in a project, separate documentation is required showing (1) a minimum 10-year continuing need, based on the installation's annual real property utilization survey, for active building retention after retrofit, (2) the specific retrofit action applicable and (3) an economic analysis supporting the specific retrofit.

k. Nonappropriated funded facilities will not be included in an ECIP project without an accompanying statement certifying that utility costs are not reimbursable.

l. Any requirements required by ECIP guidance dated 10 Jan 1994 and any revisions thereto. Note that unescalated costs/savings are to be used in the economic analyses.

m. The five digit category number for all ECIP projects except for Family Housing is 80000. The category code number for Family Housing projects is 71100.

Appendix 5 - Field Data Forms

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608
(904) 376-5500 [FAX 375-3479]

LIGHTING SURVEY FORM/ELECTRICAL

Project Number: 93243-20 Location: MILAN, TN

Date: 6/14/94 Building: VARIOUS Floor: _____

Room No. VARIOUS Function: BLDG/BELT Department: _____

14) Fixture Size (1 x 4, 2 x 4, 2 x 2): 18" / 32" DIA

Lamps/Fixture ONE Fixture/Room VARIES

Lens Type (Vir. Acri, GL, Prsm, LVR, Par. Mini Cub, Par. Dp. Cell) GLASS / ROUND

Ballast Type (Mag, ESB, Octron) NONE

100/200/300 Watts(___ QTZ ___ HPS ___ LPS ___ MV ___ MH)

Lamp Type: ✓ Incand. ___ Fluor. ___ HID

Fixture Mtg: ___ Surface (Clg/Wall/Furn) DIRECT Dir/Indir.

___ Recessed (Can/Grid/Ceiling/Wall)

PENDANT Suspended (Chain/Pendant)

Fixture Voltage (120/208/240/277/480) 120V

Fixture Type: ___ Exit ___ Emergency Egress

✓ Main LTG (OR) ✓ AUX. LTG ___ Accent LTG

Battery Backup (Yes/No) NO

Switching: (All/Part-2/1, 2/2) ALL

SW by ROWS: NO 3 Way/4 Way SW NO

Fixture Mtg. Height Above Floor VARIES

Work Surface Height: 32" - 48" Ceiling Height Above Floor VARIES

Room Size: ___ L x ___ W x ___ H

Room Reflectance/Colors:

BLACK Ceiling WH/RED Walls RED Floors

Existing Light Levels (FC/LUX) SEE FLOOR PLAN

Contributing Light (Yes/No) YES - OUTDOOR LTG.

(Nearby Light/Windows) VIA LT. PNLS. & WINDOWS

Fixture Atmosphere (Indoor/Outdoor) INDOOR/EXTERIOR

Room/Fixture Maint: NO Freq. Lmp. C.O. NO Fixt. Dusting

(Normal/Hazardous) HAZ. (Dry/Damp/Wet) WET

Condition ___ Good ___ Average ___ Poor

COMMENTS: INCAND. USED ON RAMPS & LOADING LIGHTS ALSO

93243/LGHT-SURF.FRM

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608
(904) 376-5500 [FAX 375-3479]

LIGHTING SURVEY FORM/ELECTRICAL

Project Number: 93243-20 Location: MILAN, TN
Date: 6/15/94 Building: VARIOUS Floor:
Room No. VARIOUS Function: OFFICE Department:
14) Fixture Size (1 x 4, 2 x 4, 2 x 2): 1X4 / INDUSTRIAL W/REFL.
Lamps/Fixture 2 OR 3 Fixture/Room VARIES
Lens Type (Vir. Acri, GL, Prsm, LVR, Par. Mini Cub, Par. Dp. Cell) NONE
Ballast Type (Mag, ESB, Octron) MAGNETIC
34 Watts(____ QTZ ____ HPS ____ LPS ____ MV ____ MH)
Lamp Type: ____ Incand. ✓ Fluor. ____ HID
Fixture Mtg: ____ Surface (Clg/Wall/Furn) DIRECT Dir/Indir.
____ Recessed (Can/Grid/Ceiling/Wall)
PENDANT Suspended (Chain/Pendant)
Fixture Voltage (120/208/240/277/480) ____
Fixture Type: ____ Exit ____ Emergency Egress
✓ Main LTG ____ AUX. LTG ____ Accent LTG
Battery Backup (Yes/No) NO
Switching: (All/Part-2/1, 2/2) ALL
SW by ROWS: NO 3 Way/4 Way SW NO
Fixture Mtg. Height Above Floor VARIES
Work Surface Height: 32" - 48" Ceiling Height Above Floor VARIES
Room Size: ____ L x ____ W x ____ H
Room Reflectance/Colors:
DARK Ceiling DARK Walls RED Floors
Existing Light Levels (FC/LUX) SEE FLOOR PLAN
Contributing Light (Yes/No) YES - OUTDOOR LTG. VIA
(Nearby Light/Windows) HT. PULS, WINDOWS, & DOORS
Fixture Atmosphere (Indoor/Outdoor) INDOOR ONLY
Room/Fixture Maint: NO Freq. Lmp. C.O. NO Fixt. Dusting
(Normal/Hazardous) NORMAL (Dry/Damp/Wet) DRY, HUMID
Condition ____ Good ____ Average ____ Poor
COMMENTS: NON-HAZ. FLUORESCENTS IN OFFICES OR OTHER NON-HAZ. AREAS

93243/LGHT-SUR.FRM

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608
(904) 376-5500 [FAX 375-3479]

LIGHTING SURVEY FORM/ELECTRICAL

Project Number: 93243-20 Location: MILAN, TN.

Date: 6/14/94 Building: VARIOUS Floor: _____

Room No. VARIOUS Function: BELT / TASK Department: _____

14) Fixture Size (1 x 4, 2 x 4, 2 x 2): 1 x 4

Lamps/Fixture 2 OR 3 Fixture/Room VARIES

Lens Type (Vir. Acri, GL, Prsm, LVR, Par. Mini Cub, Par. Dp. Cell) GLASS / FLAT

Ballast Type (Mag, ESB, Octron) MAGNETIC

34 Watts(____ QTZ ____ HPS ____ LPS ____ MV ____ MH)

Lamp Type: ____ Incand. ✓ Fluor. ____ HID

Fixture Mtg: ____ Surface (Clg/Wall/Furn) DIRECT Dir/Indir.

Recessed (Can/Grid/Ceiling/Wall)

PENDANT Suspended (Chain/Pendant)

Fixture Voltage (120/208/240/277/480) 120V

Fixture Type: ____ Exit ____ Emergency Egress

✓ Main LTG (OR) ✓ AUX. LTG ____ Accent LTG

Battery Backup (Yes/No) NO

Switching: (All/Part-2/1, 2/2) ALL

SW by ROWS: NO 3 Way/4 Way SW NO

Fixture Mtg. Height Above Floor VARIES

Work Surface Height: 32"-48" Ceiling Height Above Floor VARIES

Room Size: ____ L x ____ W x ____ H

Room Reflectance/Colors:

BLACK Ceiling WH/RED Walls RED Floors

Existing Light Levels (FC/LUX) SEE FLOOR PLAN

Contributing Light (Yes/No) YES - OUTDOOR LIGHTING

(Nearby Light/Windows) VIA LT. PNLS. & WINDOWS

Fixture Atmosphere (Indoor/Outdoor) INDOOR

Room/Fixture Maint: NO Freq. Lmp. C.O. NO Fixt. Dusting

(Normal/Hazardous) HAZ (Dry/Damp/Wet) DRY, HUMID

Condition ____ Good ____ Average ____ Poor

COMMENTS: FLUORESCENTS USED ON BELTS & OTHER TASK LIGHTING

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LIGHTING SURVEY FORM/ELECTRICAL

Project Number: 93243-20 Location: MILAN, TN
Date: 6/15/94 Building: VARIOUS Floor:
Room No. VARIOUS Function: BLDG/BELT Department:
14) Fixture Size (1 x 4, 2 x 4, 2 x 2):
Lamps/Fixture ONE Fixture/Room VARIES
Lens Type (Vir. Acrl, GL, Prsm, LVR, Par. Mini Cub, Par. Dp. Cell) TEXTURED GLASS
Ballast Type (Mag, ESB, Octron) MAGNETIC
100 Watts(___ QTZ ___ HPS ___ LPS ✓ MV ___ MH)
Lamp Type: ___ Incand. ___ Fluor. ✓ HID
Fixture Mtg: ___ Surface (Clg/Wall/Furn) DIRECT Dir/Indir.
___ Recessed (Can/Grid/Ceiling/Wall)
PENDANT Suspended (Chain/Pendant)
Fixture Voltage (120/208/240/277/480) 120 ✓
Fixture Type: ___ Exit ___ Emergency Egress
✓ Main LTG ___ AUX. LTG ___ Accent LTG
Battery Backup (Yes/No) NO
Switching: (All/Part-2/1, 2/2) ALL
SW by ROWS: NO 3 Way/4 Way SW NO
Fixture Mtg. Height Above Floor VARIES
Work Surface Height: 32" - 48" Ceiling Height Above Floor
Room Size: ___ L x ___ W x ___ H
Room Reflectance/Colors:
BLACK Ceiling WH/RED Walls RED Floors
Existing Light Levels (FC/LUX) SEE FIELD NOTES
Contributing Light (Yes/No) YES - OUTDOOR LTG. VIA
(Nearby Light/Windows) LT. PANELS & WINDOWS
Fixture Atmosphere (Indoor/Outdoor) INDOOR/EXTERIOR FIXTS.
Room/Fixture Maint: NO Freq. Lmp. C.O. NO Fixt. Dusting
(Normal/Hazardous) HAZ. (Dry/Damp/Wet) WET
Condition ___ Good ___ Average ___ Poor
COMMENTS: EXTERIOR LOADING LIGHTS; INTERIOR BLDG. LIGHTS

93243/LGHT-SURF.FRM

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608
(904) 376-5500 [FAX 375-3479]

LIGHTING SURVEY FORM/ELECTRICAL

Project Number: 93243-20 Location: MILAN, TN.

Date: 6/15/94 Building: VARIOUS Floor:

Room No. VARIOUS Function: BLDG LTG Department:

14) Fixture Size (1 x 4, 2 x 4, 2 x 2):

Lamps/Fixture ONE Fixture/Room VARIES

Lens Type (Vlr. Acrl, GL, Prsm, LVR, Par. Mini Cub, Par. Dp. Cell) TEXTURED GLASS

Ballast Type (Mag, ESB, Octron) MAGNETIC

100 Watts(QTZ ✓ HPS LPS MV MH)

Lamp Type: Incand. Fluor. ✓ HID

Fixture Mtg: Surface (Clg/Wall/Furn) DIRECT Dir/Indir.

Recessed (Can/Grid/Ceiling/Wall)

PENDANT Suspended (Chain/Pendant)

Fixture Voltage (120/208/240/277/480) 120V

Fixture Type: Exit Emergency Egress

✓ Main LTG AUX. LTG Accent LTG

Battery Backup (Yes/No) NO

Switching: (All/Part-2/1, 2/2) ALL IN ROOM

SW by ROWS: NO 3 Way/4 Way SW NO

Fixture Mtg. Height Above Floor VARIES

Work Surface Height: 32"-48" Ceiling Height Above Floor

Room Size: L x W x H

Room Reflectance/Colors:

BLACK Ceiling WH/RED Walls RED Floors

Existing Light Levels (FC/LUX) SEE FIELD NOTES

Contributing Light (Yes/No) YES - OUTDOOR LTG. VIA

(Nearby Light/Windows) WINDOWS & DOORS

Fixture Atmosphere (Indoor/Outdoor)

Room/Fixture Maint: NO Freq. Lmp. C.O. NO Fixt. Dusting

(Normal/Hazardous) HAZ. (Dry/Damp/Wet) DRY/DAMP

Condition ✓ Good Average Poor

COMMENTS: BLDG. LIGHTING

93243/LGHT-SUR.FRM

Appendix 6 - Drawings - Existing/Upgrade

LEGEND

EXISTING/UPGRADE DRAWINGS


EXISTING INCANDESCENT OR MERCURY VAPOR FIXTURE


ADDED INCANDESCENT FIXTURE


EXISTING T12 FLUORESCENT FIXTURE


ADDED T12 FLUORESCENT FIXTURE


DIRECTIONAL FIXTURE

ALTERNATE 6 DRAWINGS


ADDED HIGH PRESSURE SODIUM FIXTURE

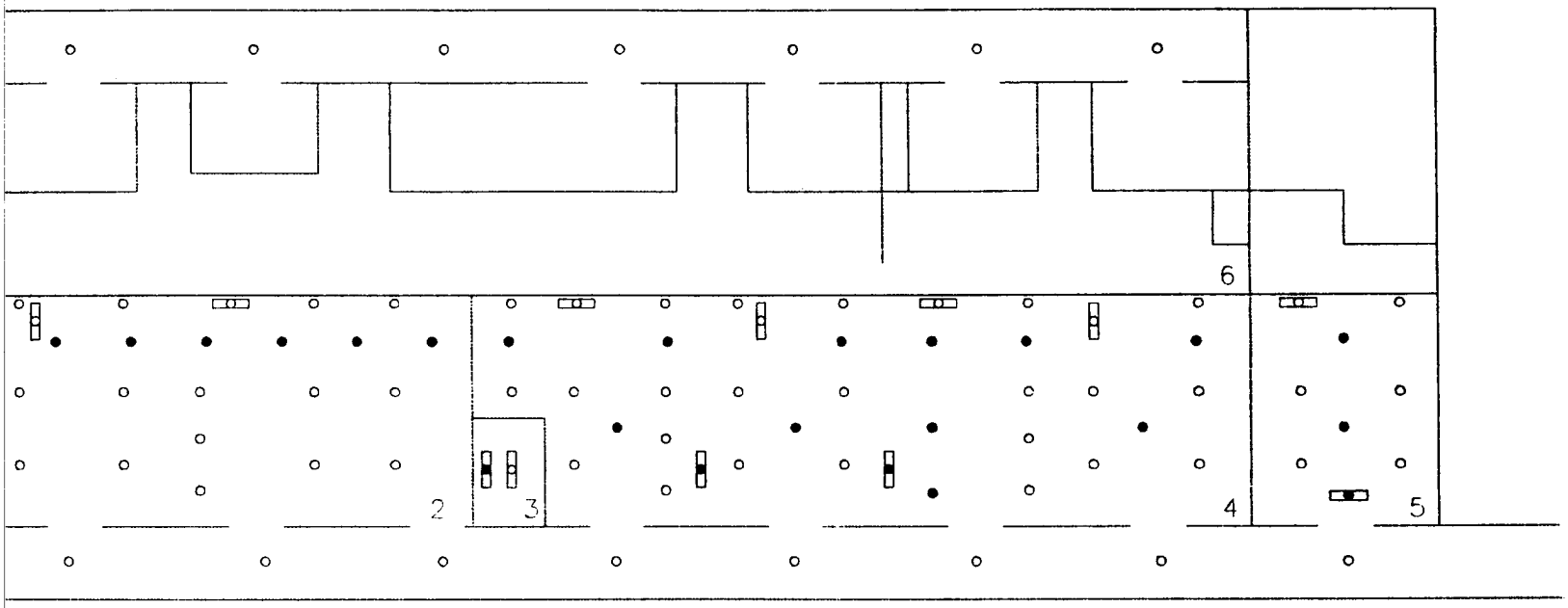

ADDED T8 FLUORESCENT FIXTURE


DIRECTIONAL FIXTURE



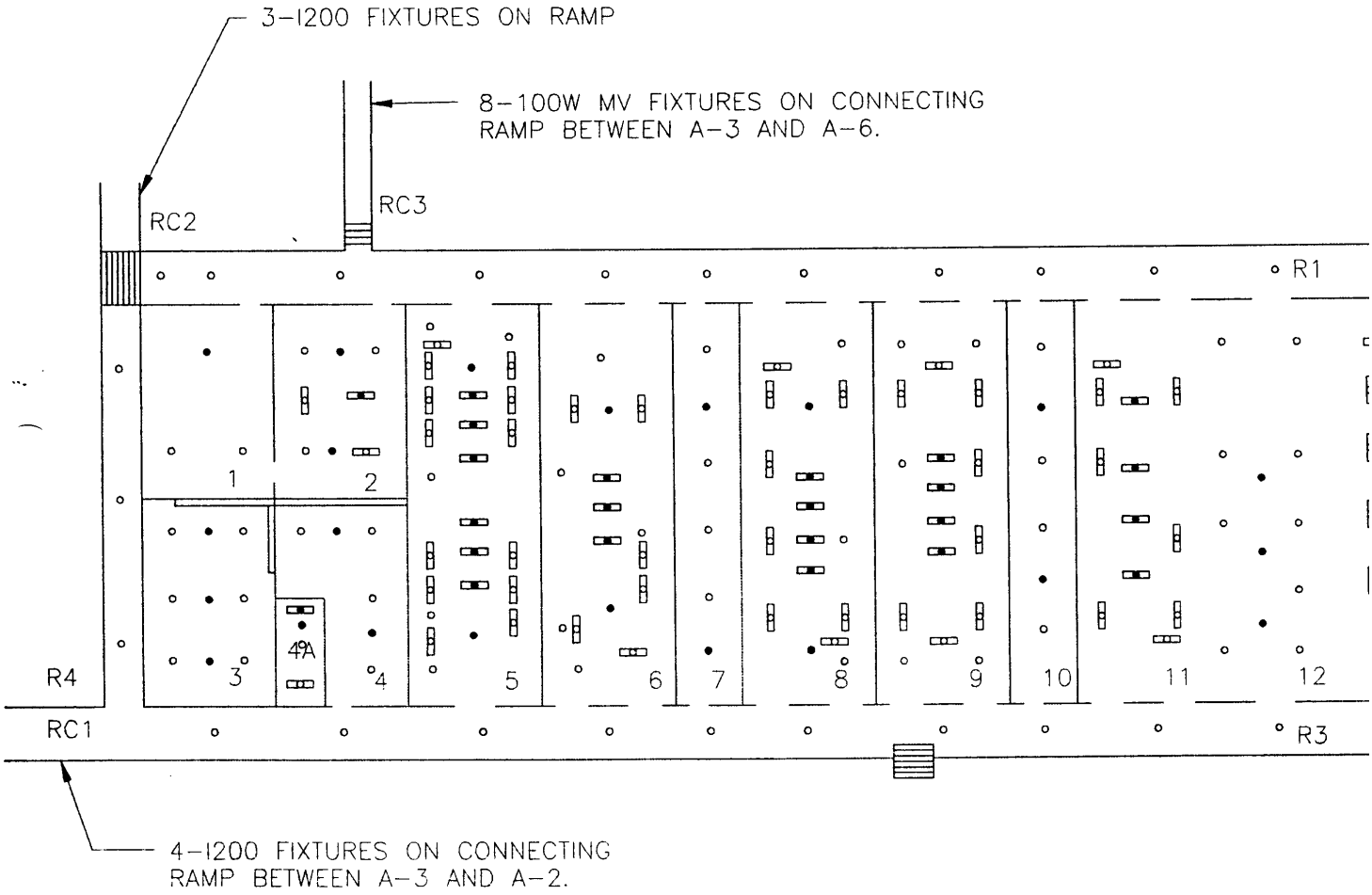
BUILDING A-2

(EXISTING/UPGRADE)



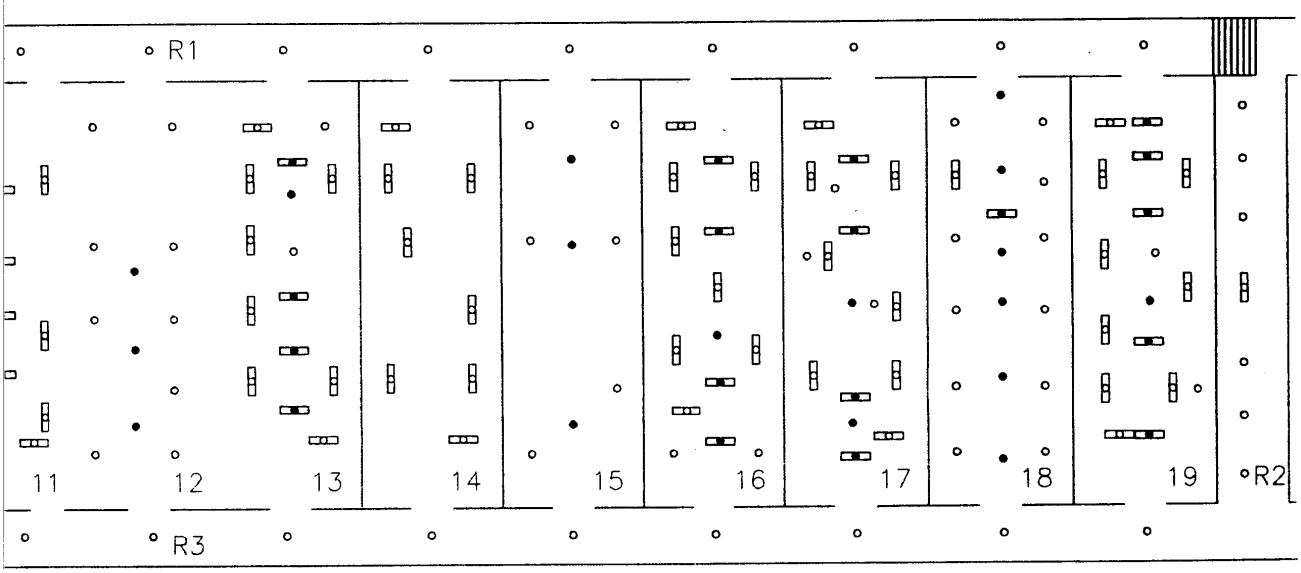
A-2

RADE)



BUILDING A-3

(EXISTING/UPGRADE)



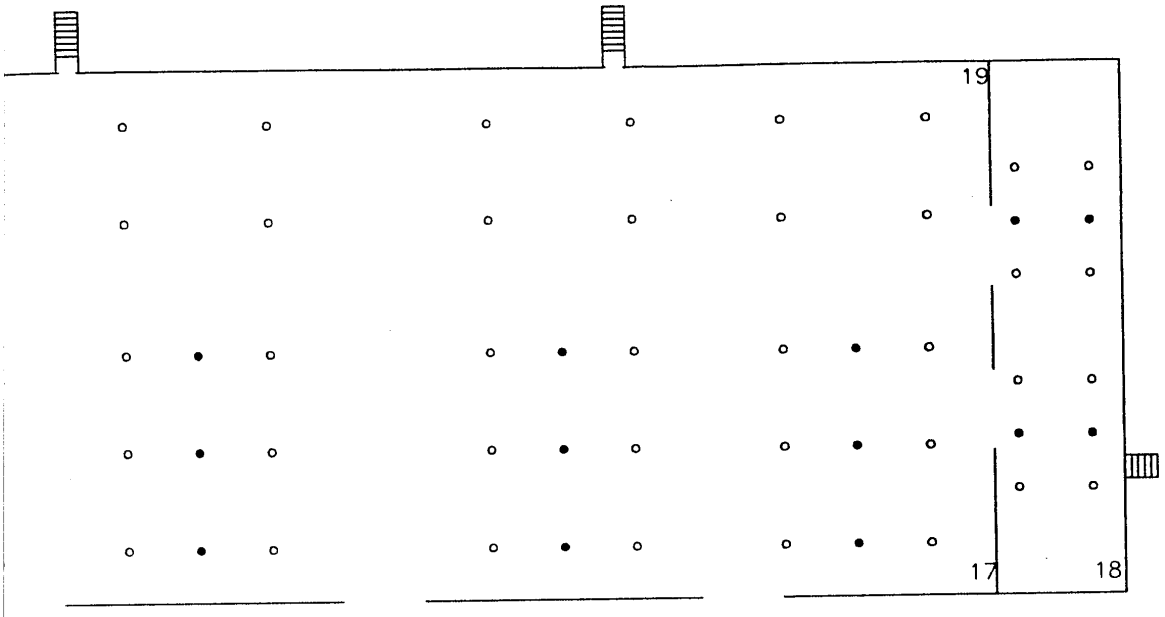
A-3

RADE)

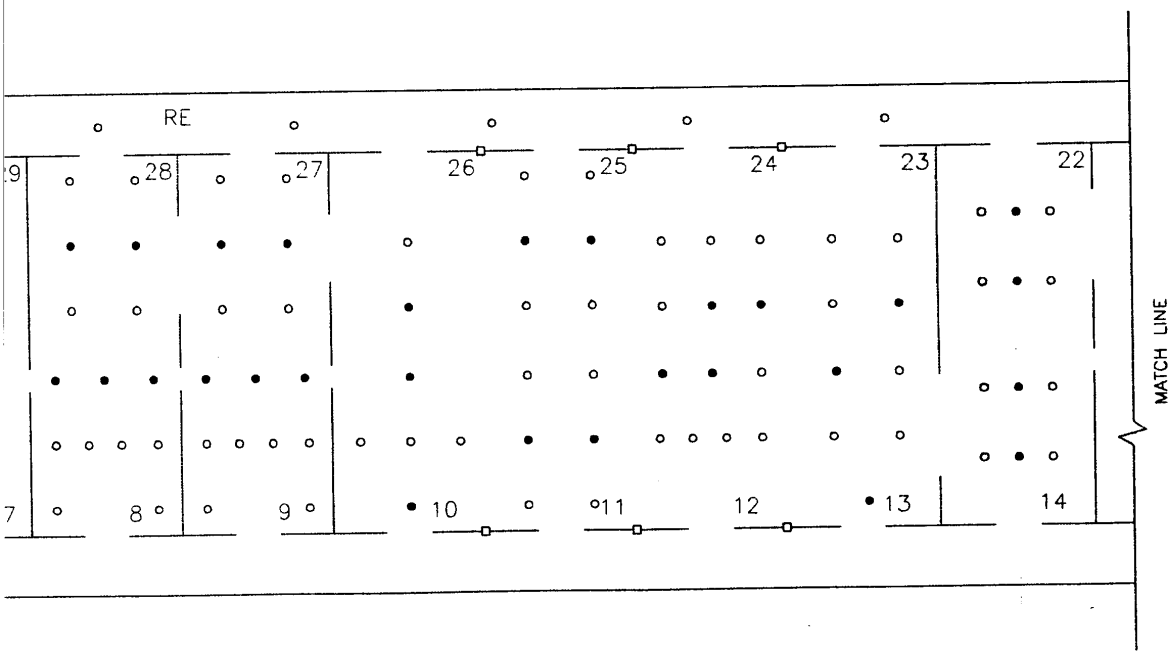


BUILDING A-4

(EXISTING/UPGRADE)

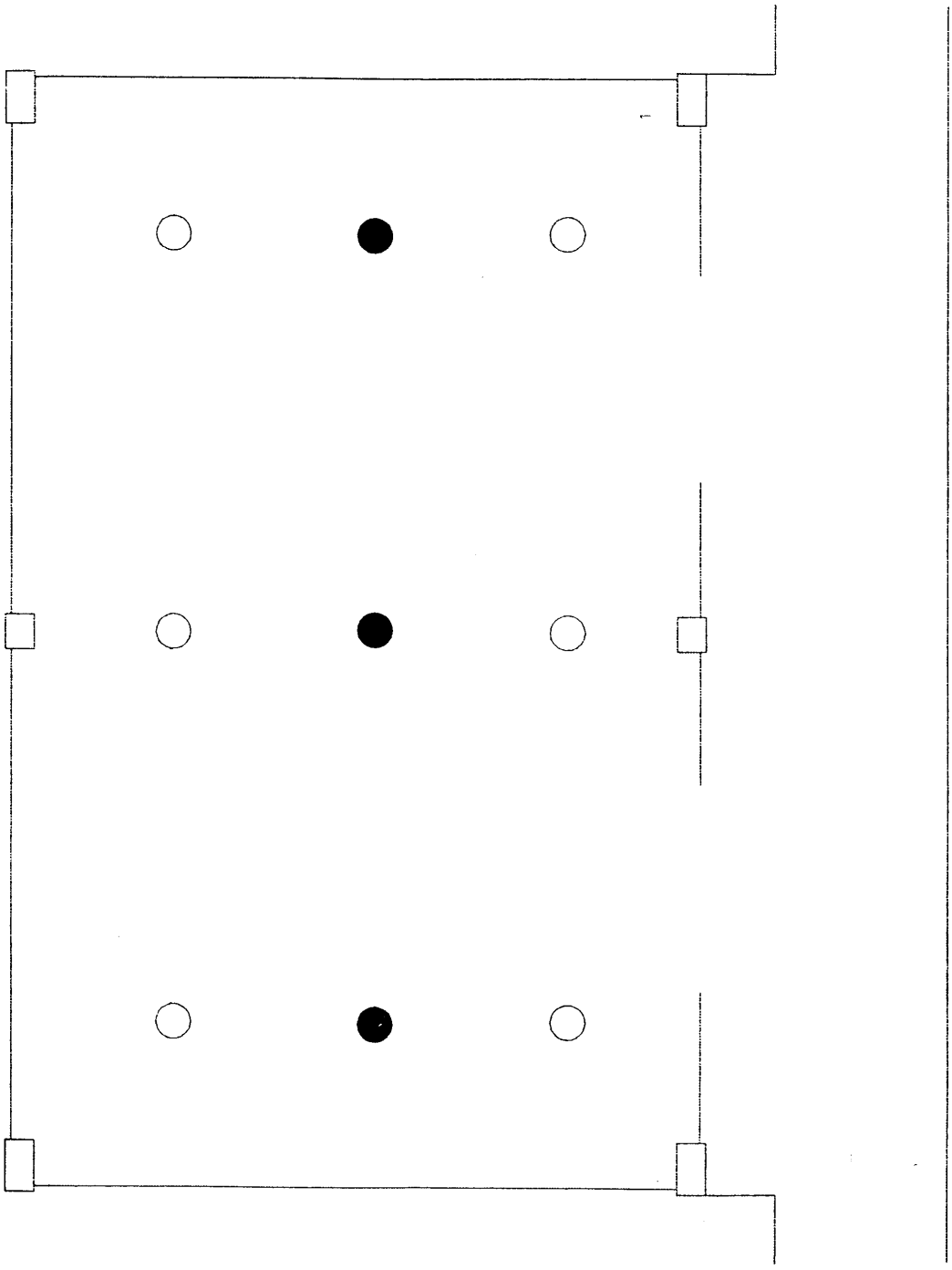


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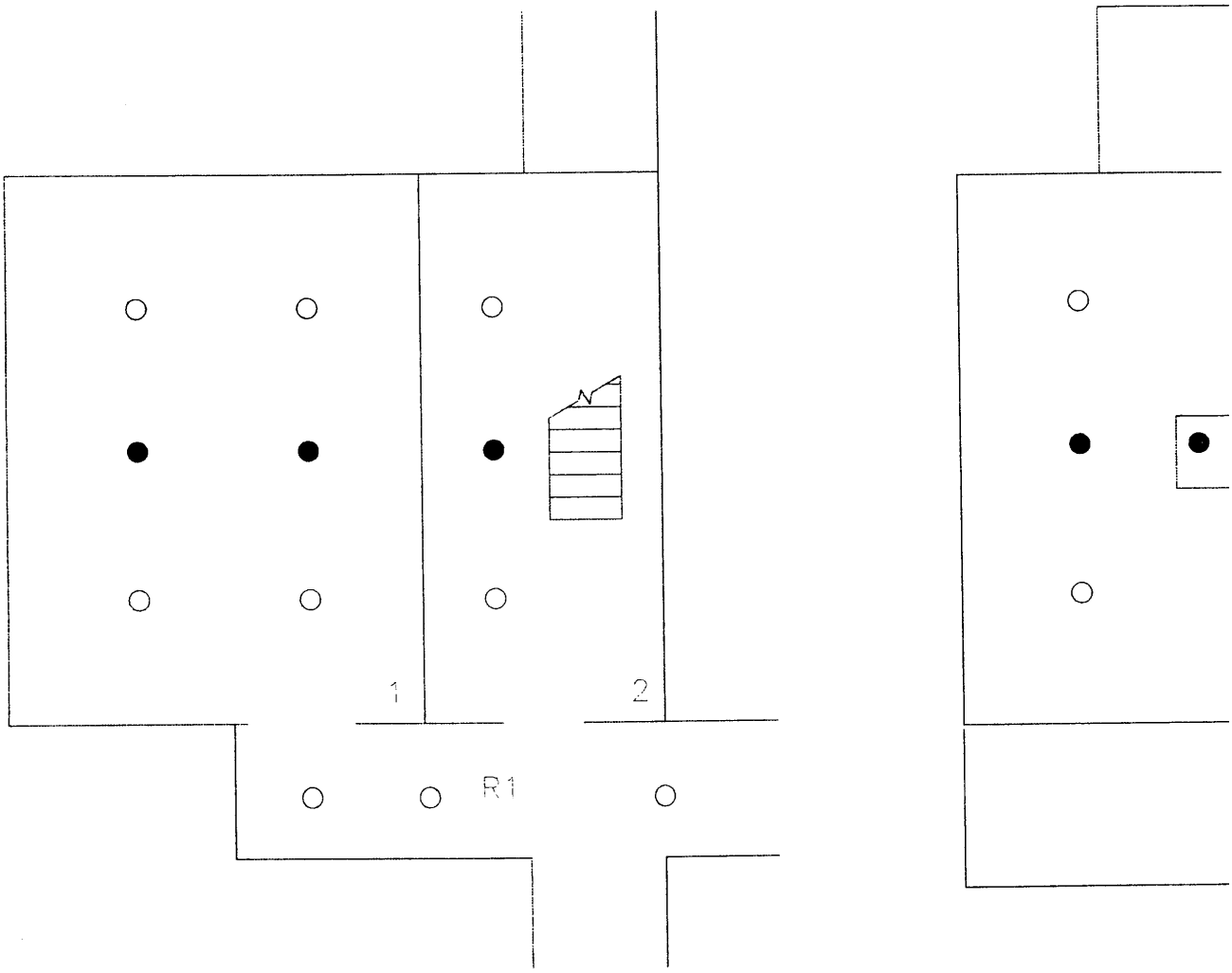
NG A-4

/UPGRADE)



BUILDING A-6

(EXISTING/UPGRADE)

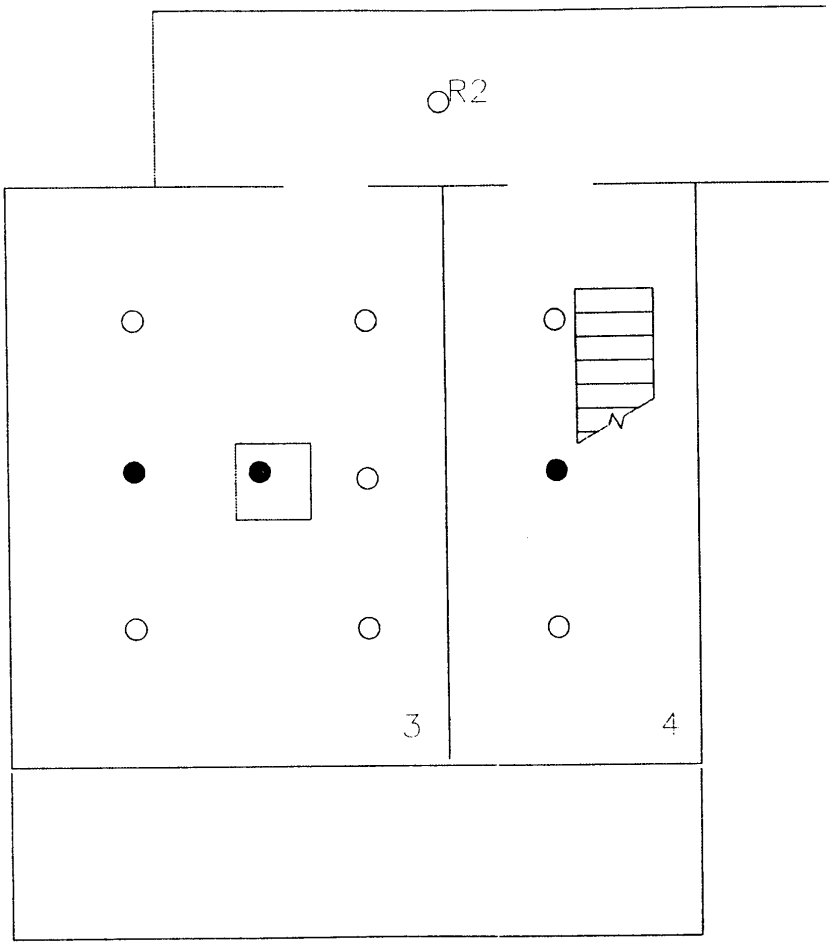


FIRST FLOOR PLAN

SECO

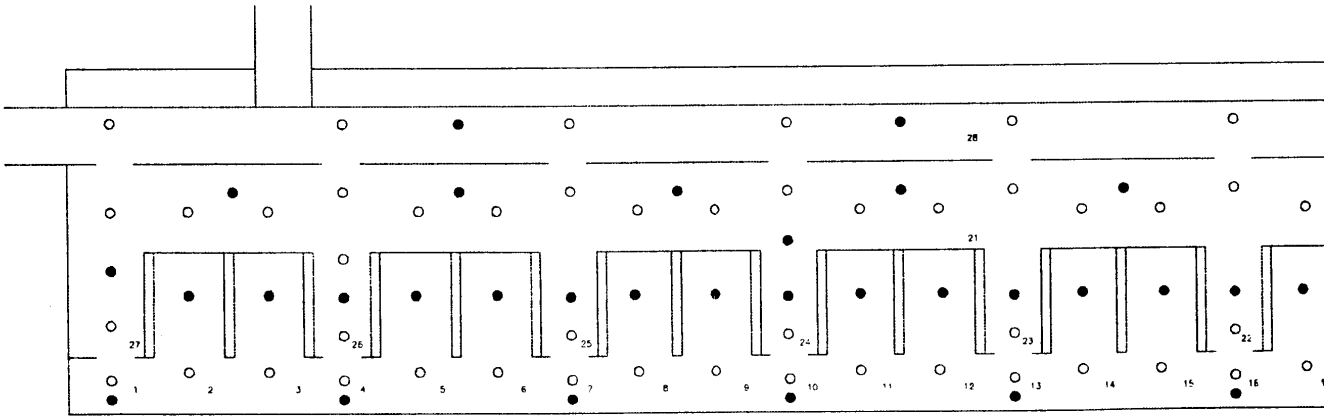
BUILDING B-10

(EXISTING/UPGRADE)

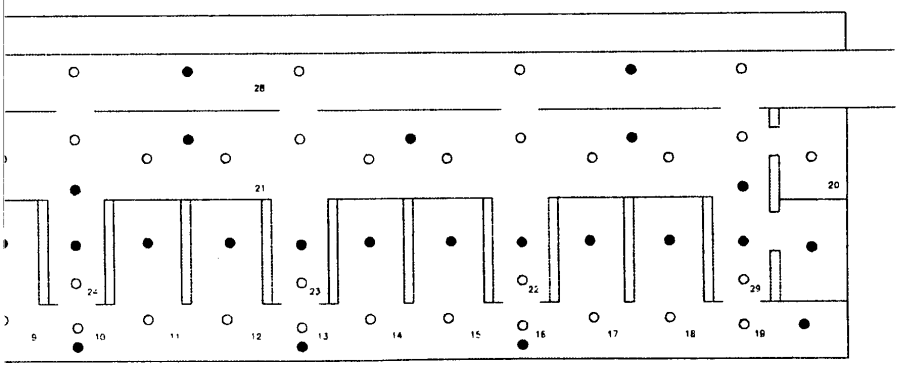


SECOND FLOOR PLAN

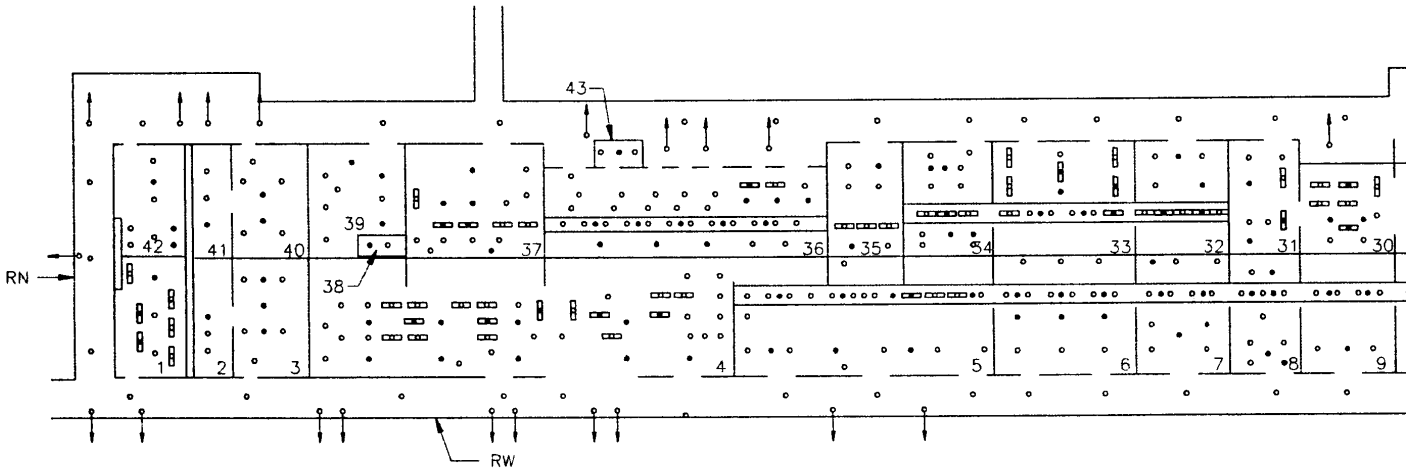
DE)



BUILDING B-12
(EXISTING/UPGRADE)

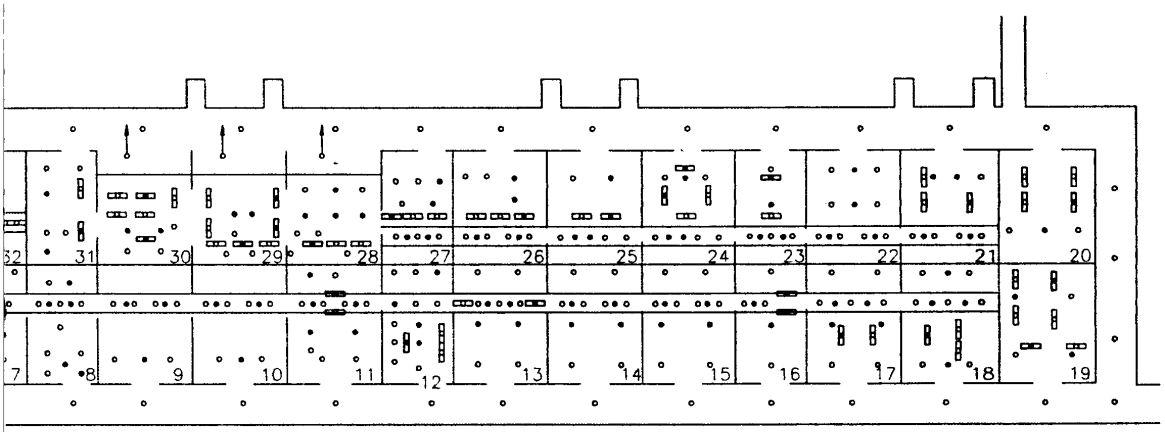


BUILDING B-12
(EXISTING/UPGRADE)

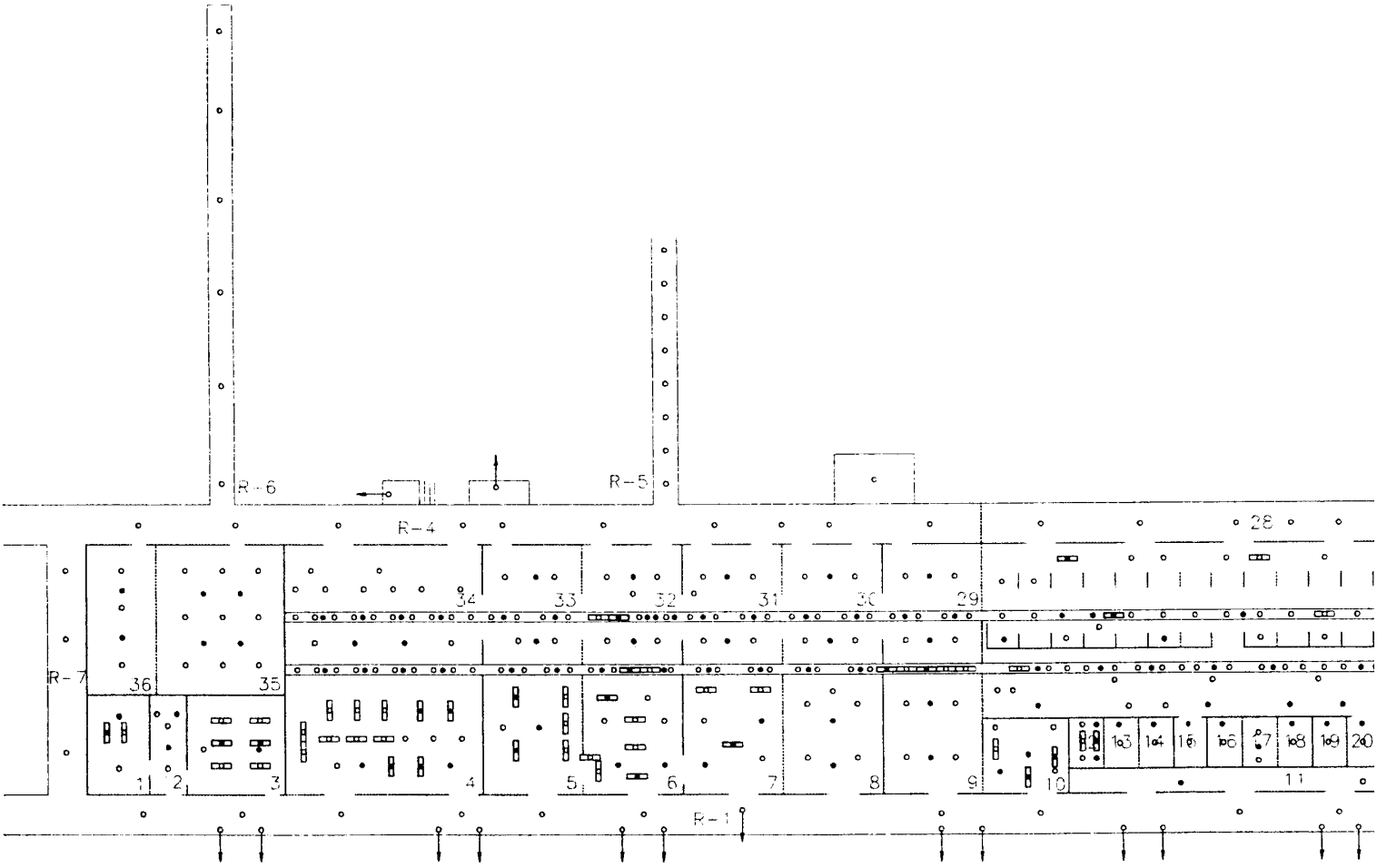


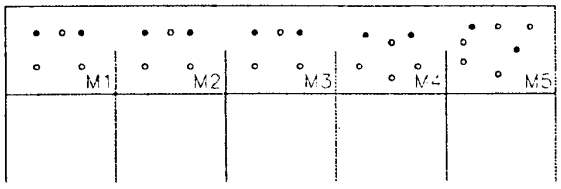
BUILDING B-14

(EXISTING/UPGRADE)

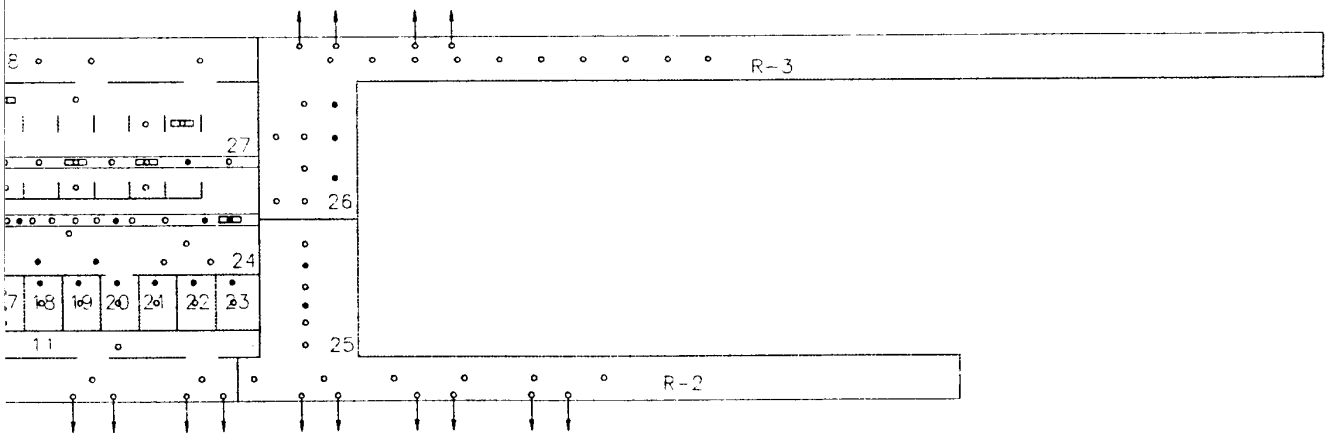


14


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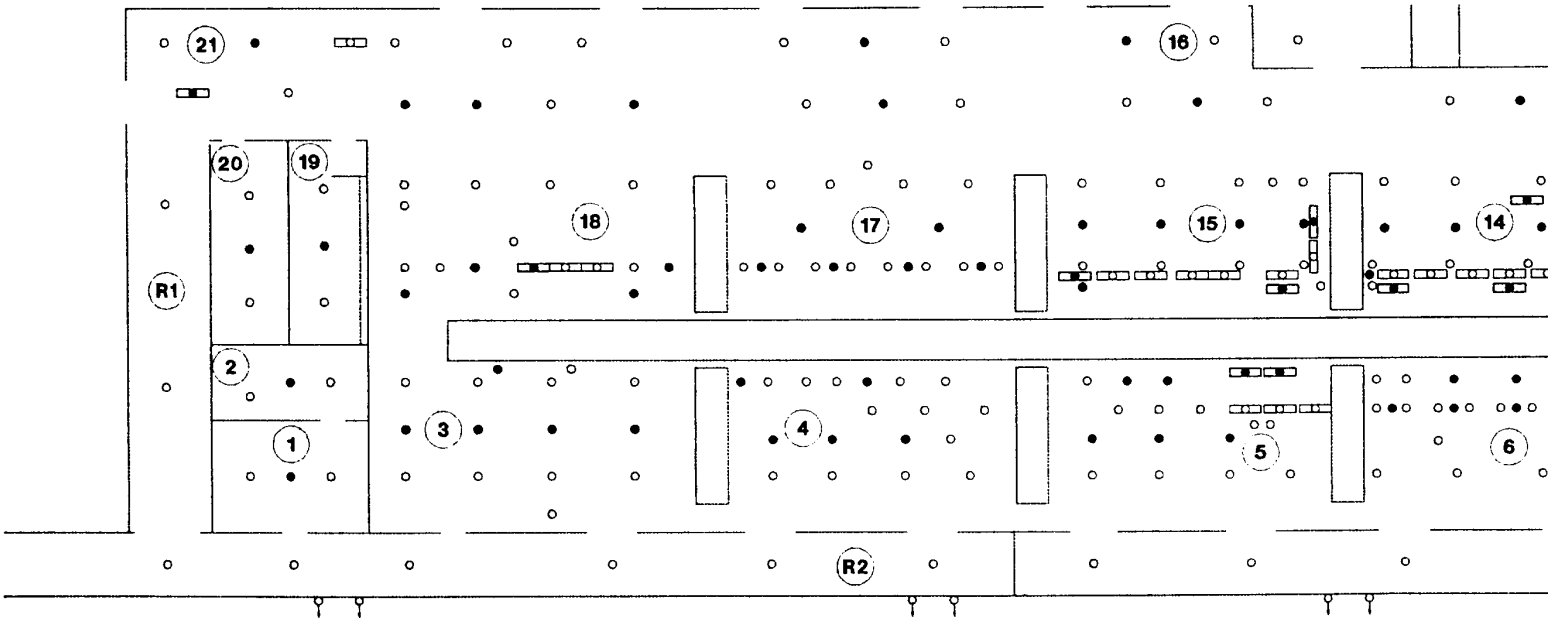

M1
M2
M3
M4
M5

BUI



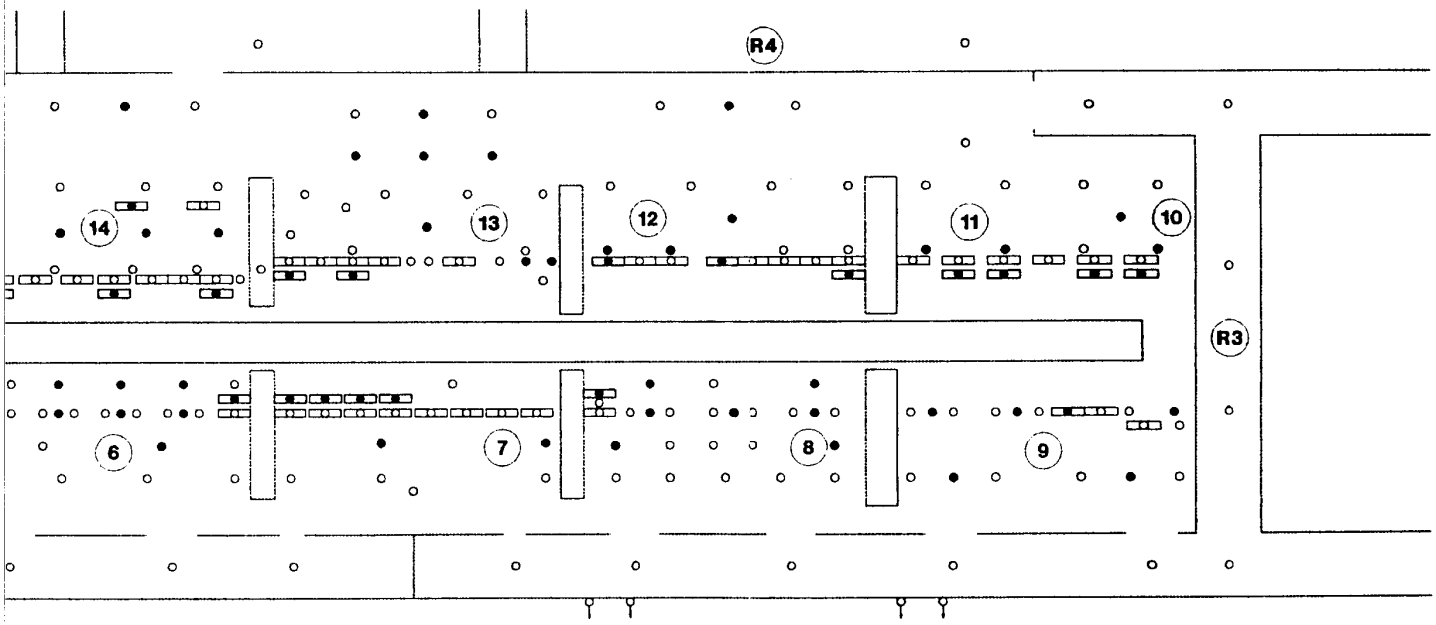
BUILDING B-18

(EXISTING/UPGRADE)



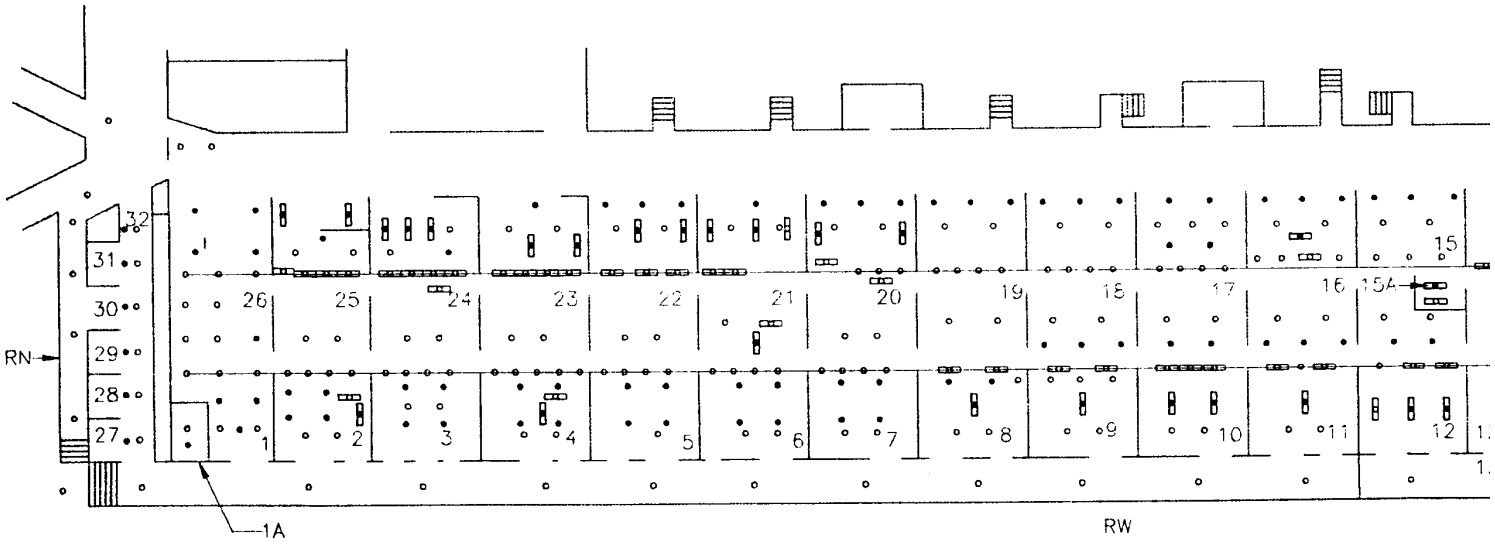
BUILDING D-3

(EXISTING/UPGRADE)



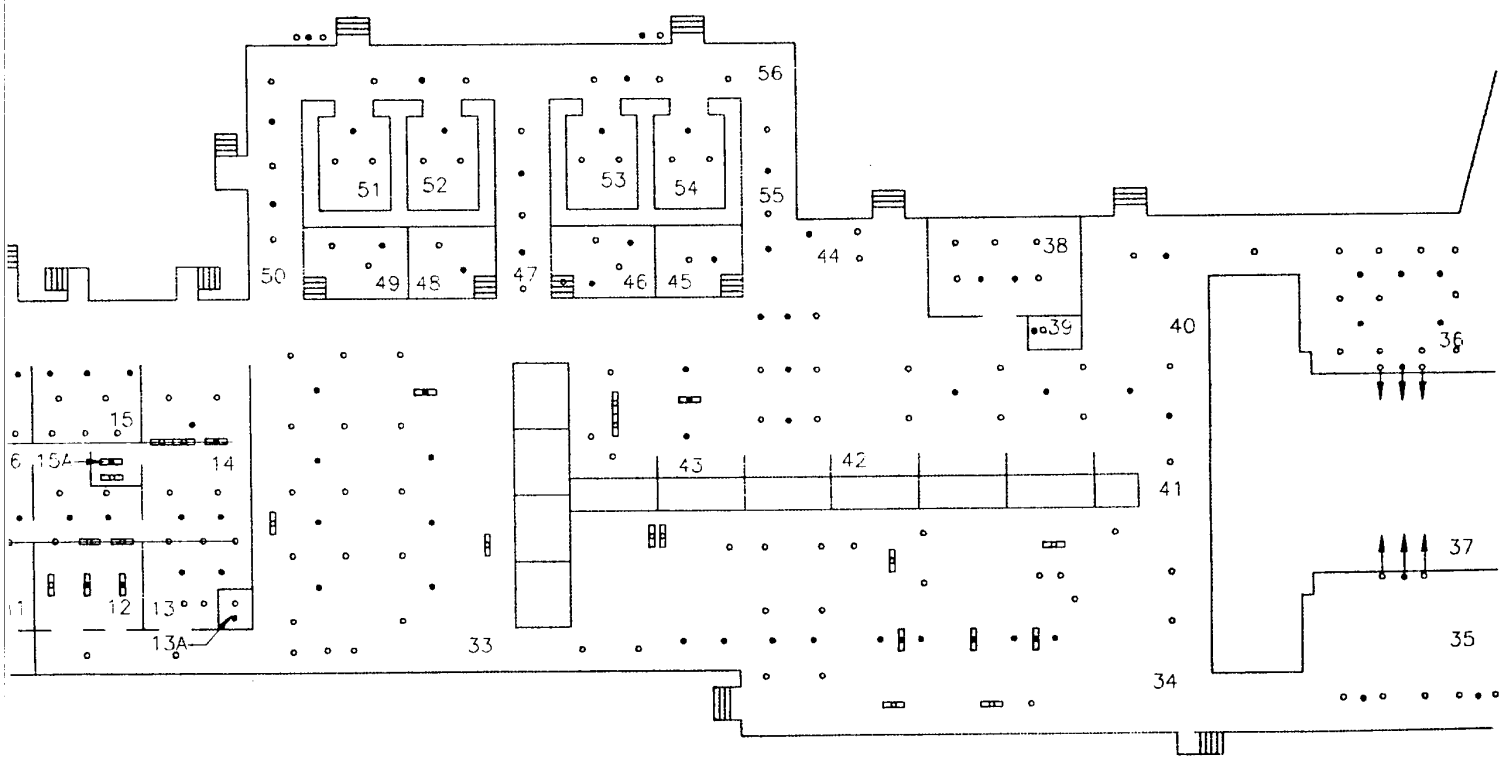
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ADE)



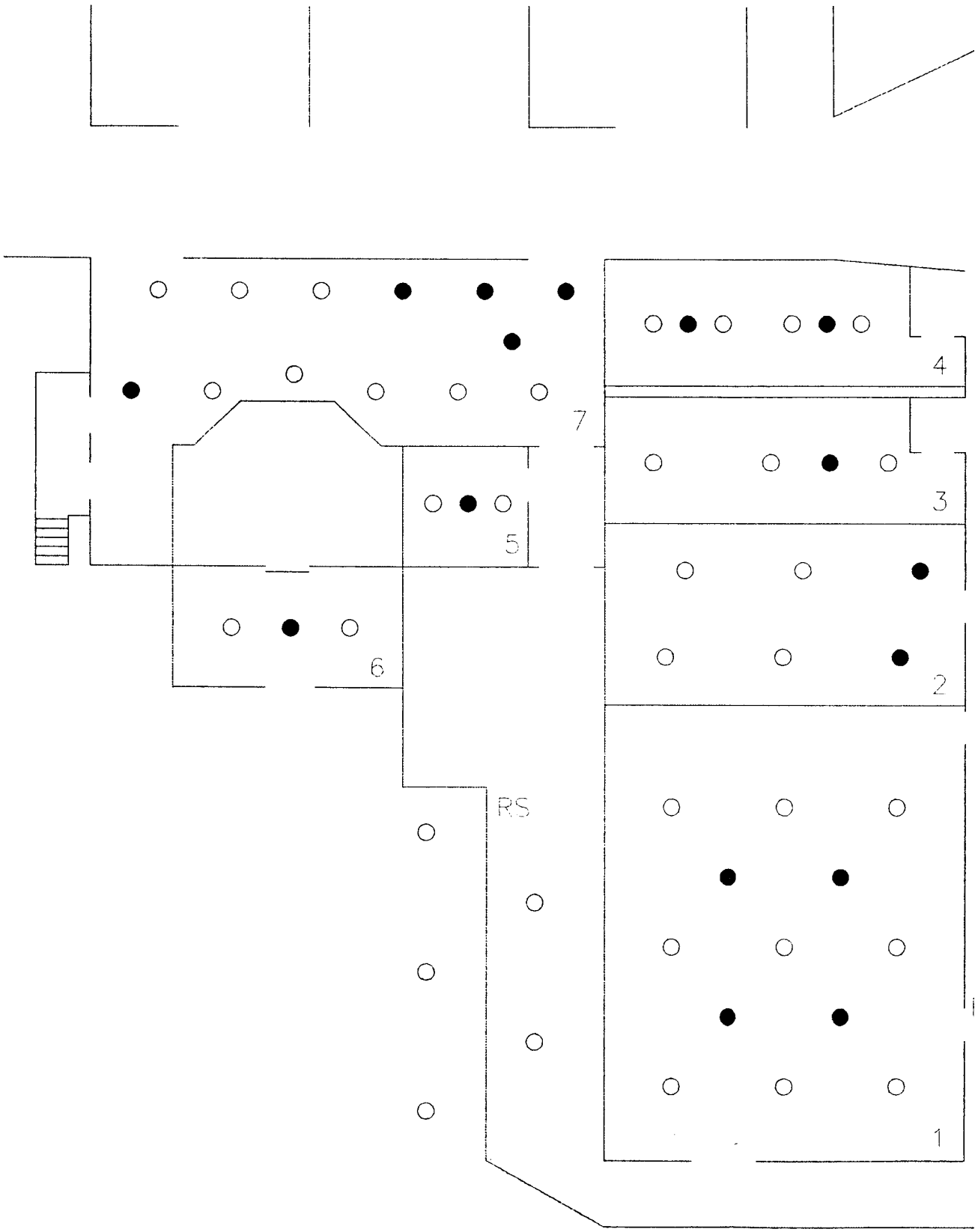
BUILDING D-

(EXISTING/UPGRADE)



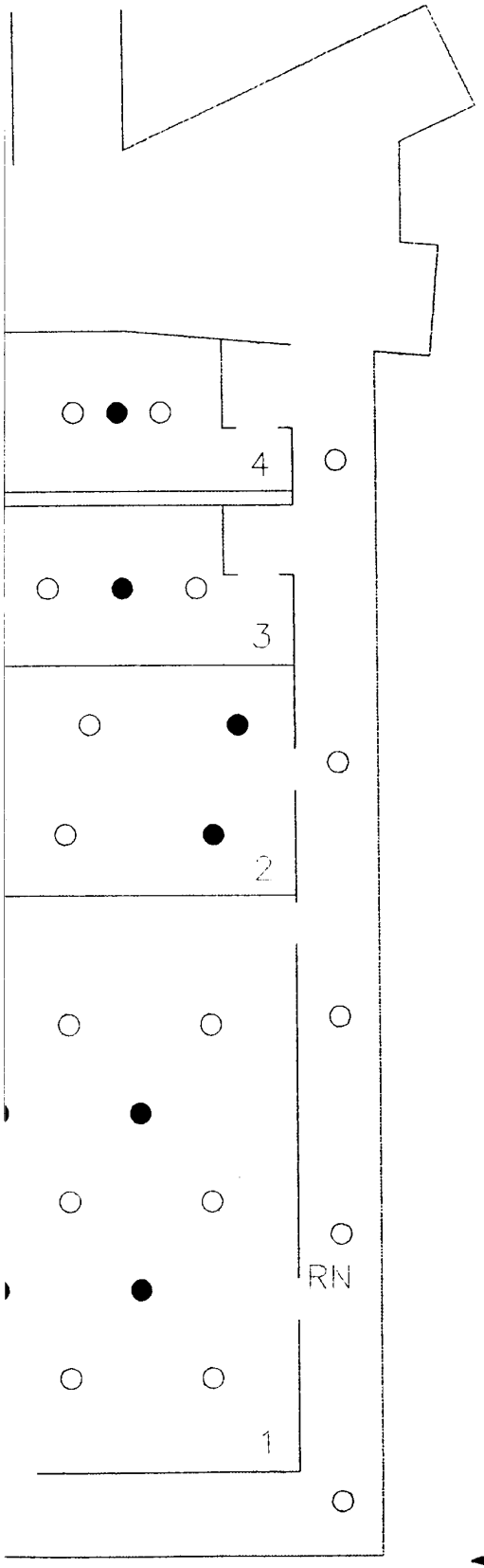
ING D-10

IG/UPGRADE)



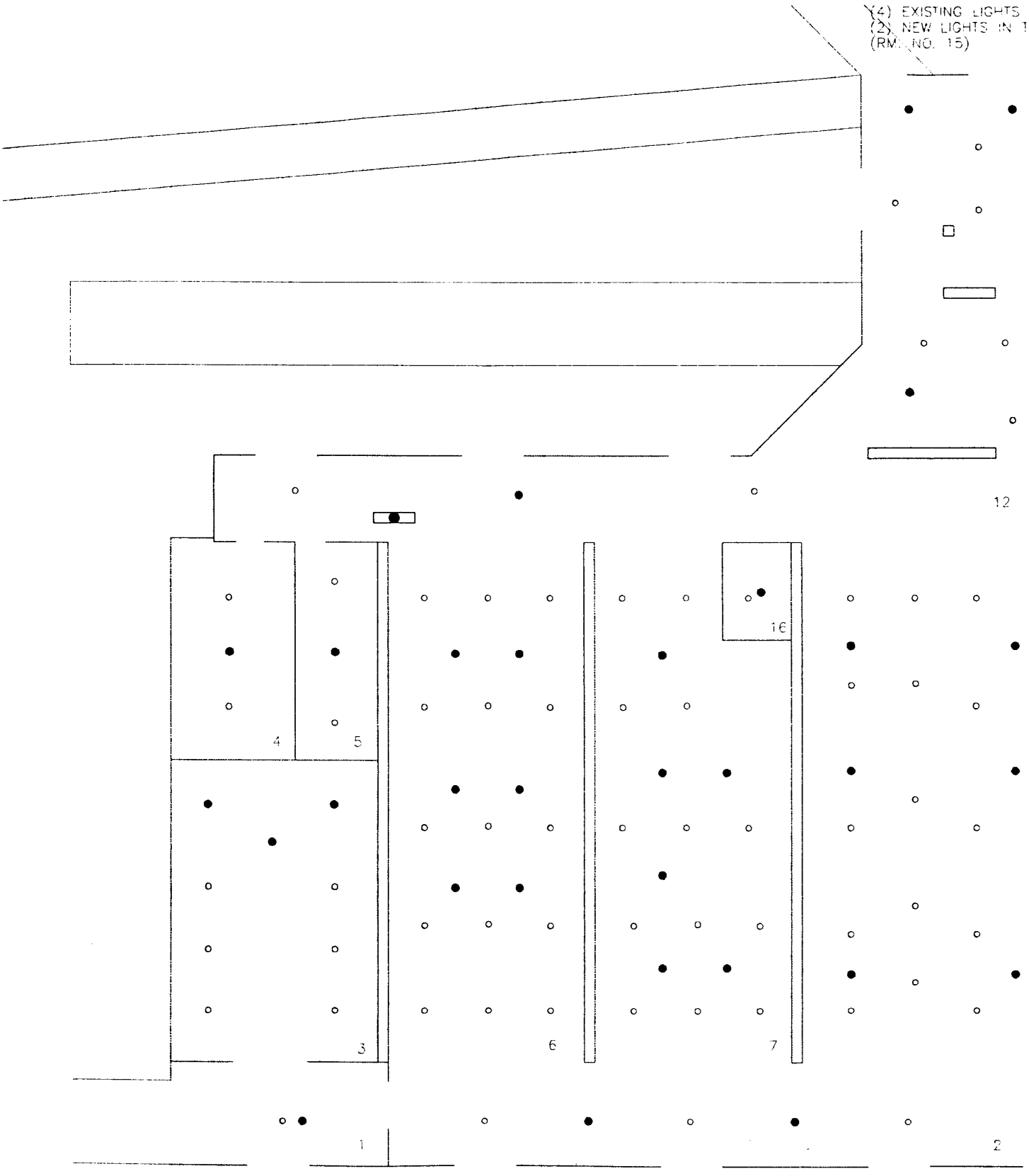
BUILDING D-1

(EXISTING AIRCRAF



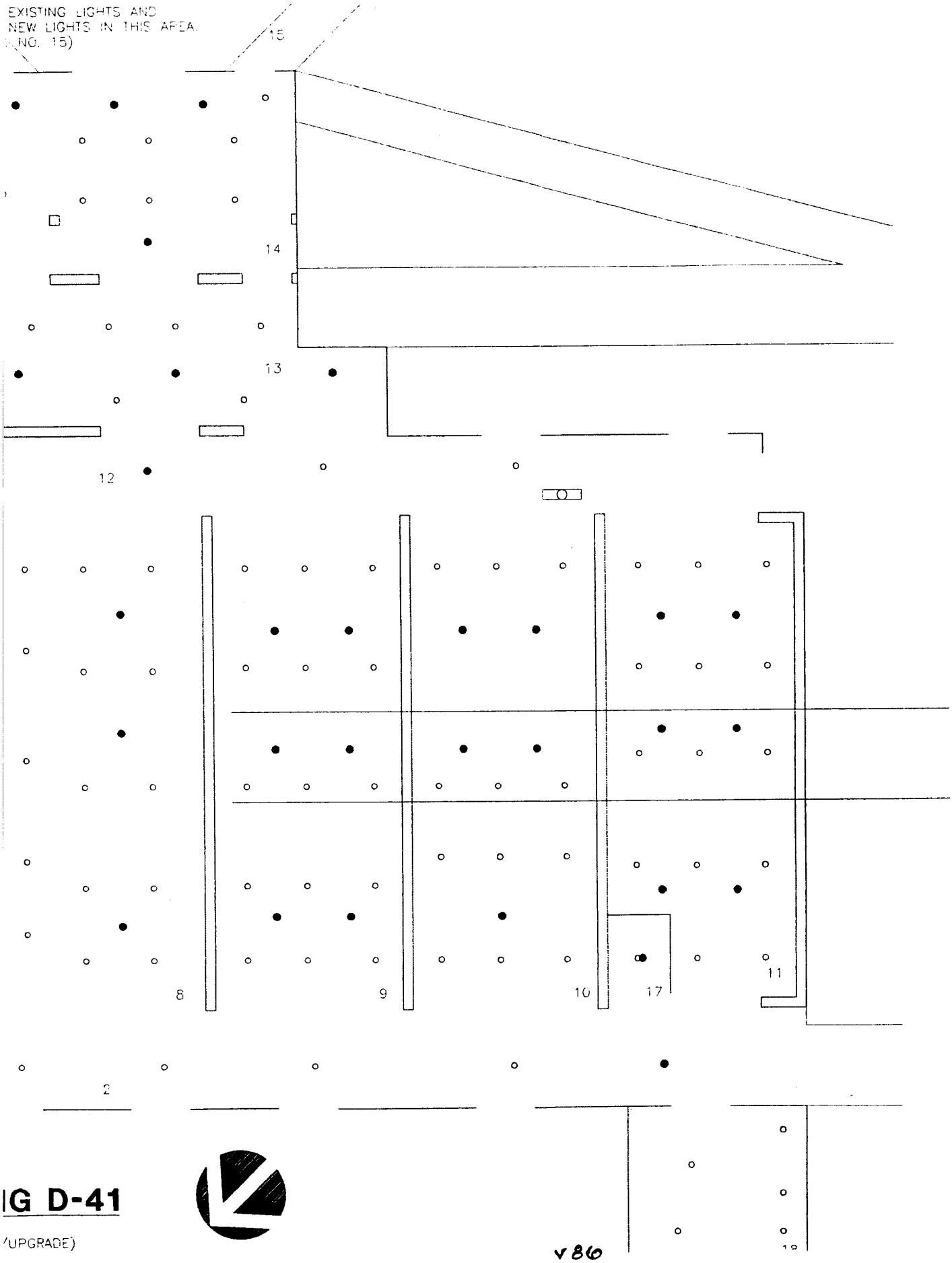
BUILDING D-16

(EXISTING/UPGRADE)



BUILDING D-41

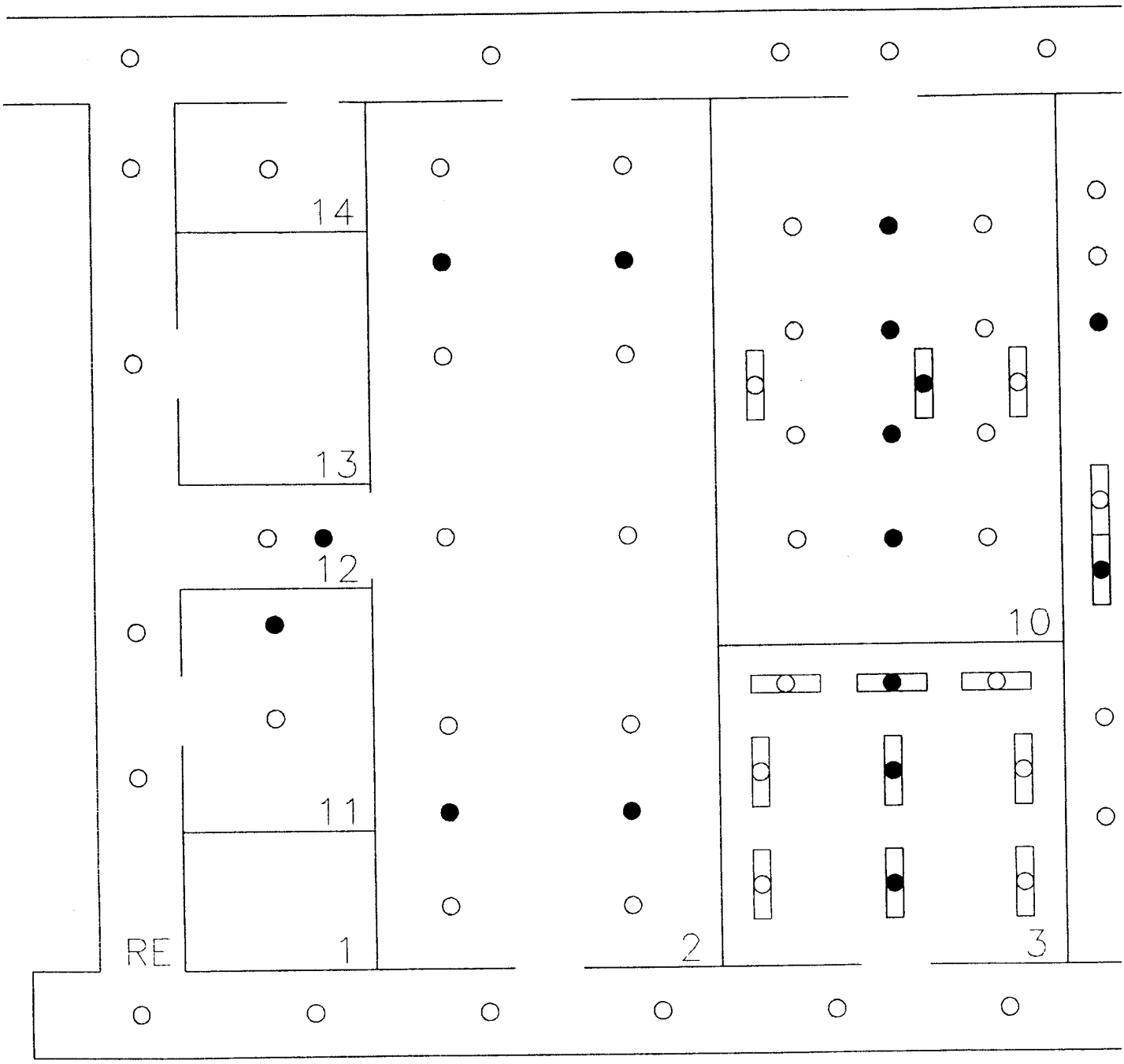
(EXISTING/UPGRADE)



IG D-41

/UPGRADE)

V86



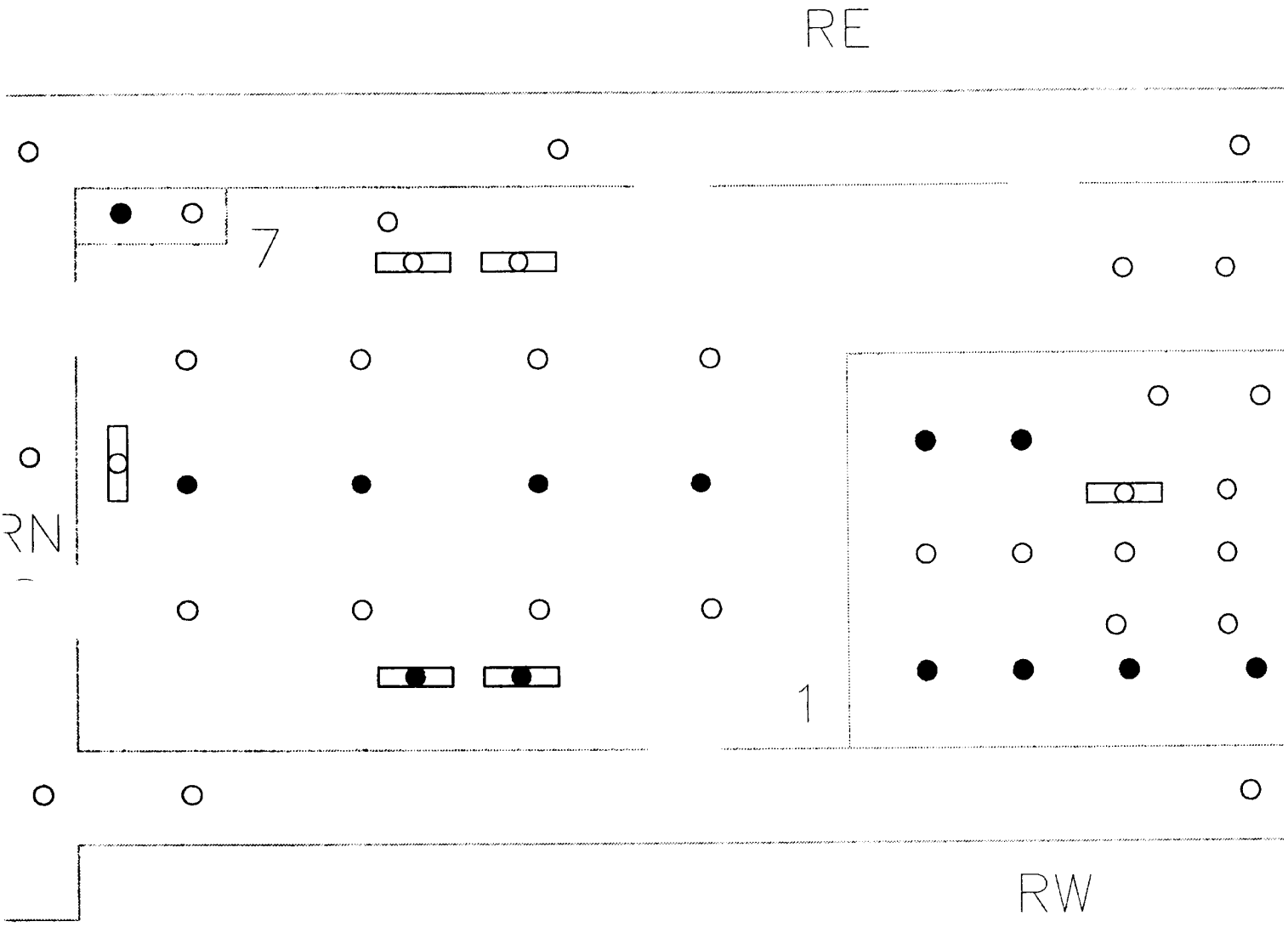
BUILDING H-81

(EXISTING/UPGRADE)



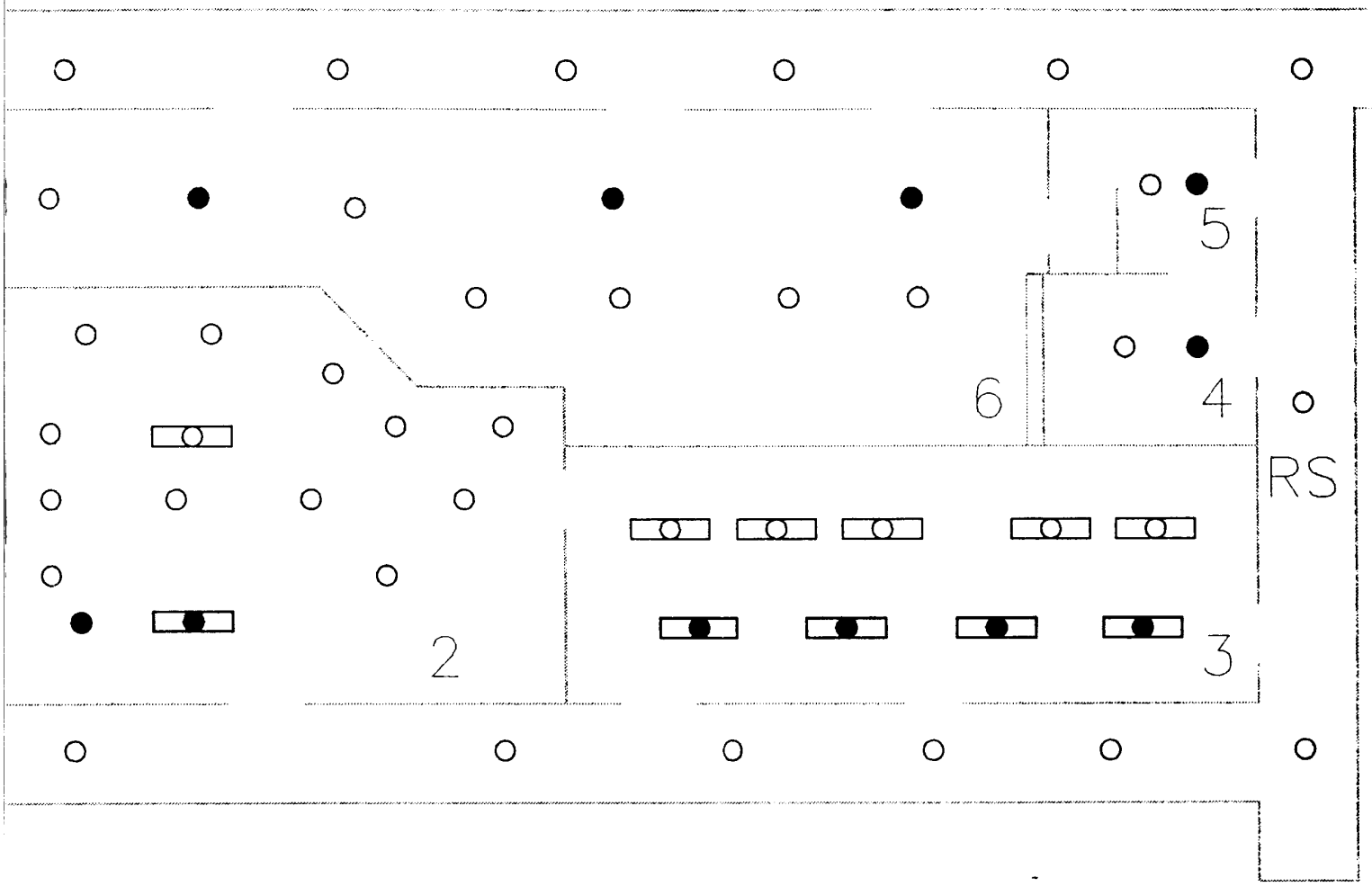
I-81

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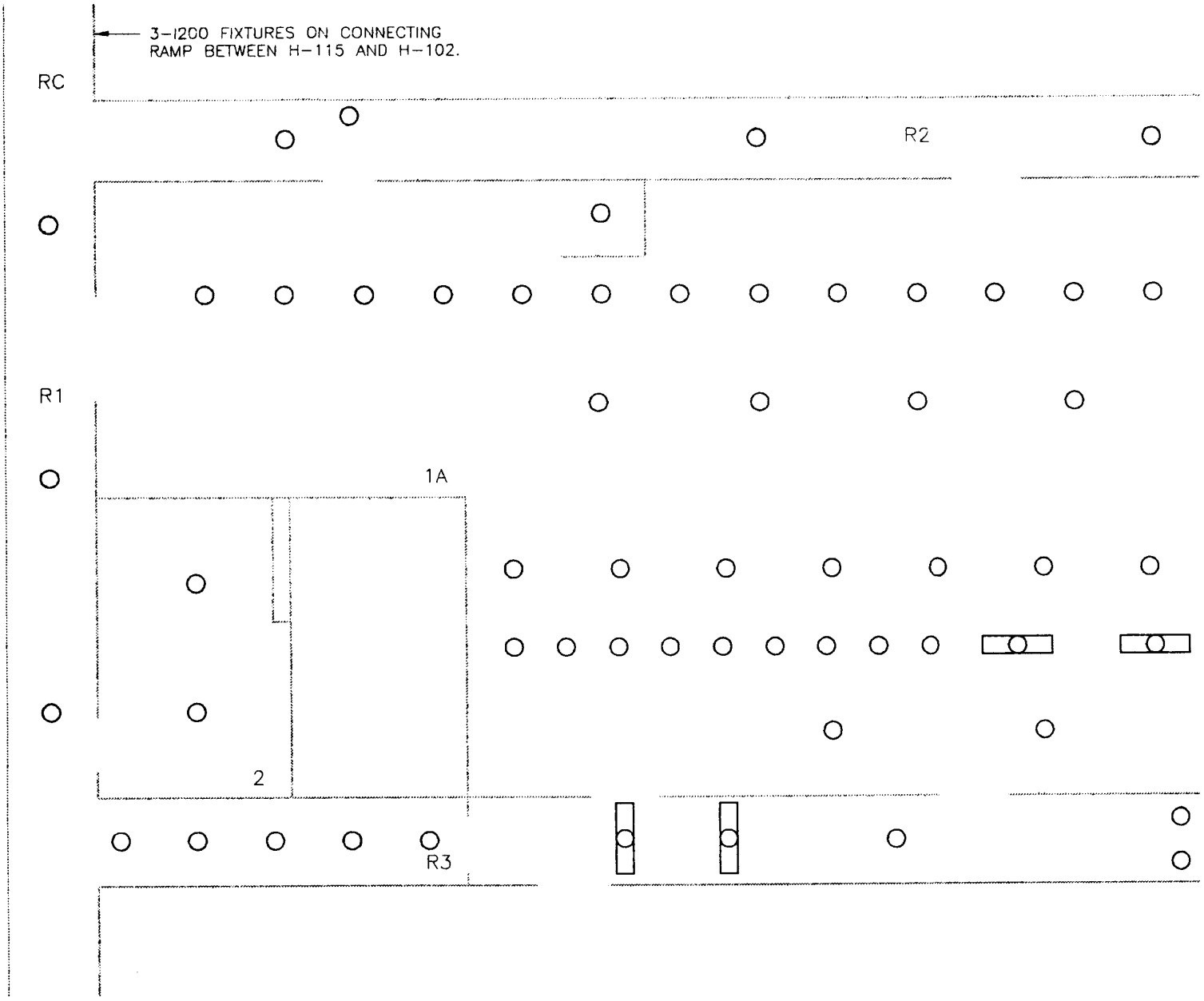
BUILDING H-111

(EXISTING/UPGRADE)



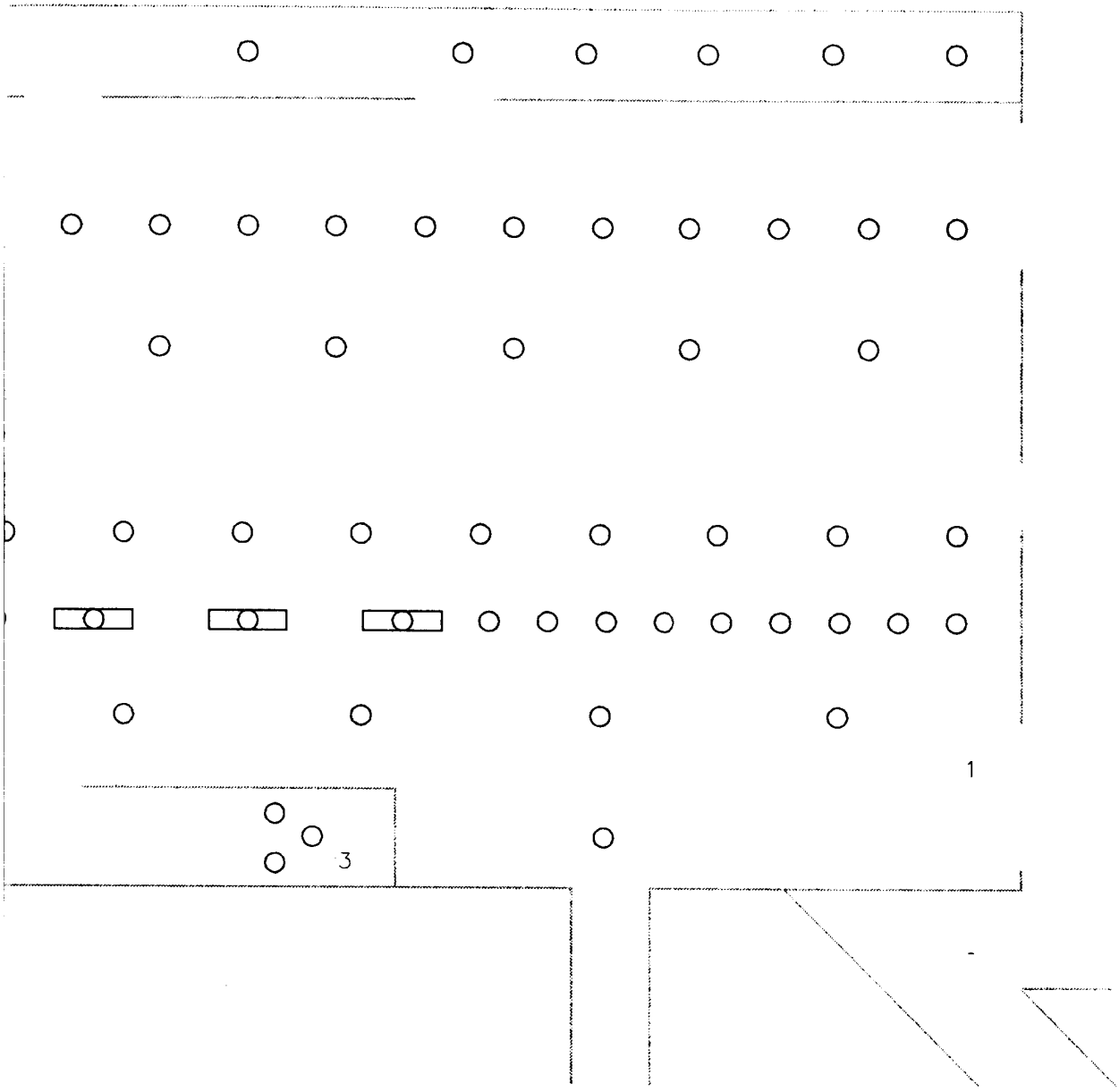
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BUILDING H-115-1

(EXISTING/UPGRADE)



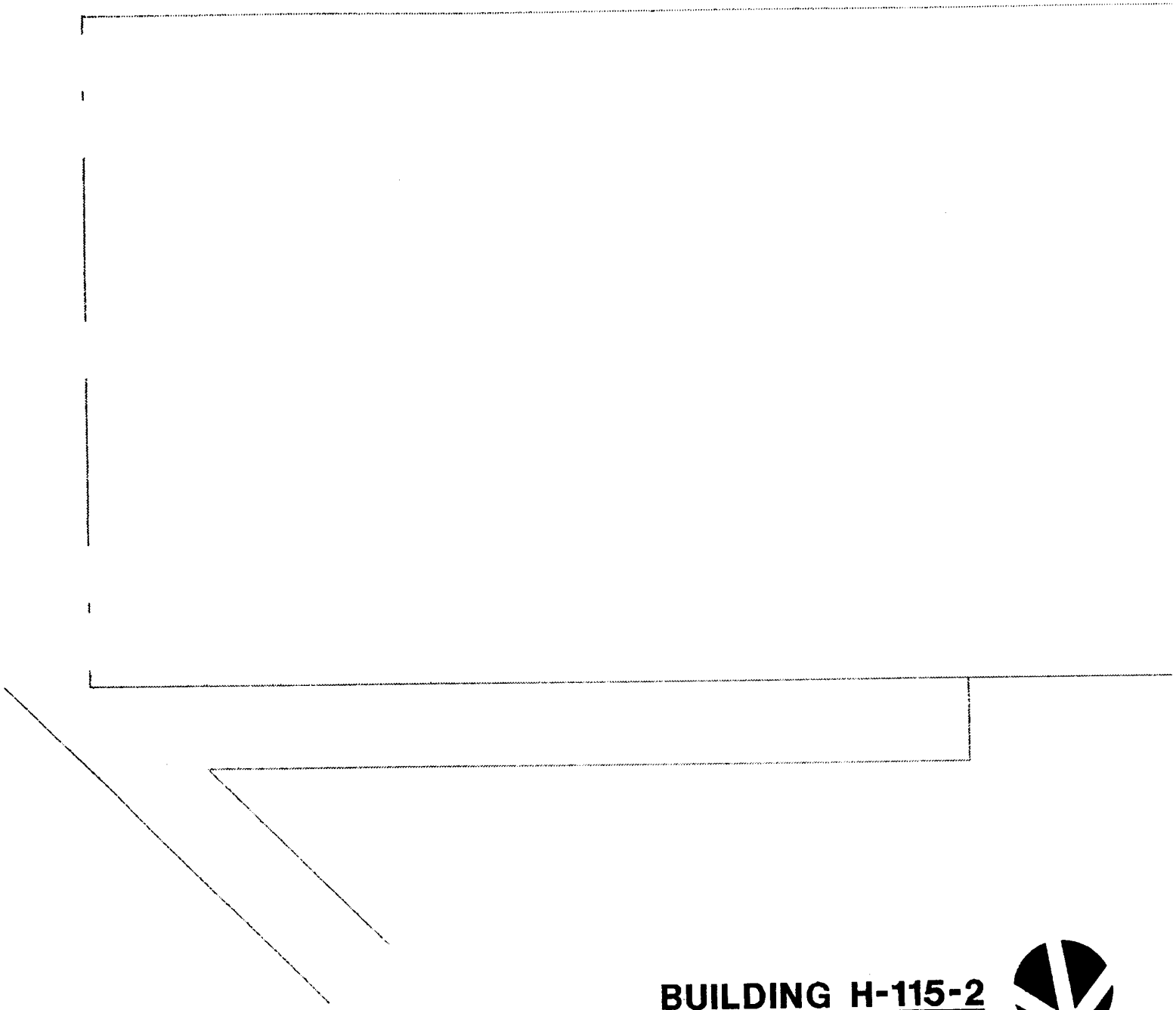
115-1
(DE)



KEY PLAN

V-89

5-1200 FIXTURE
RAMP BETWEEN

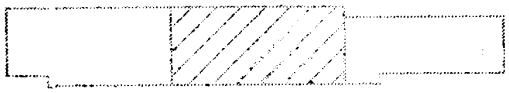


BUILDING H-115-2

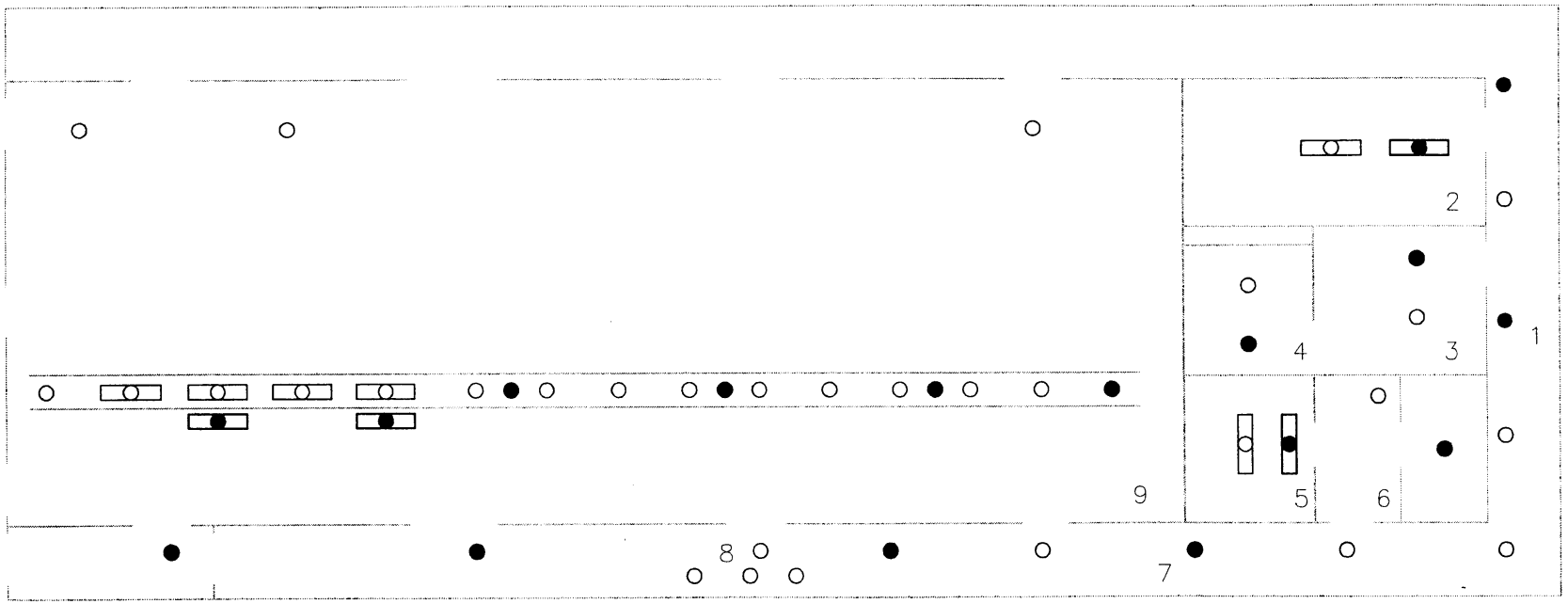
5-1200 FIXTURES ON CONNECTING RAMP BETWEEN H-115 AND H-72.

RC

5-2



KEY PLAN



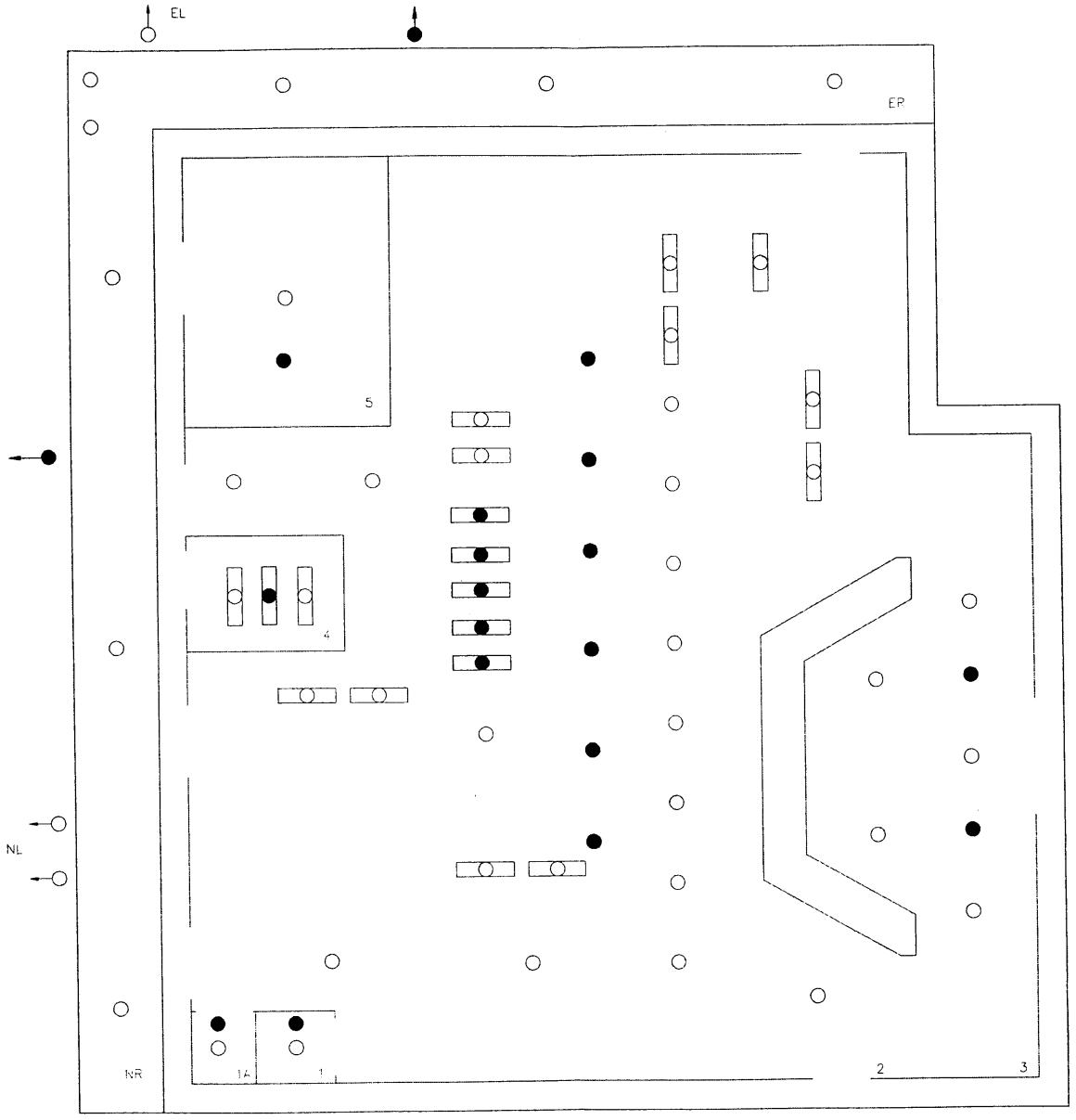
BUILDING H-115-3

(EXISTING/UPGRADE)



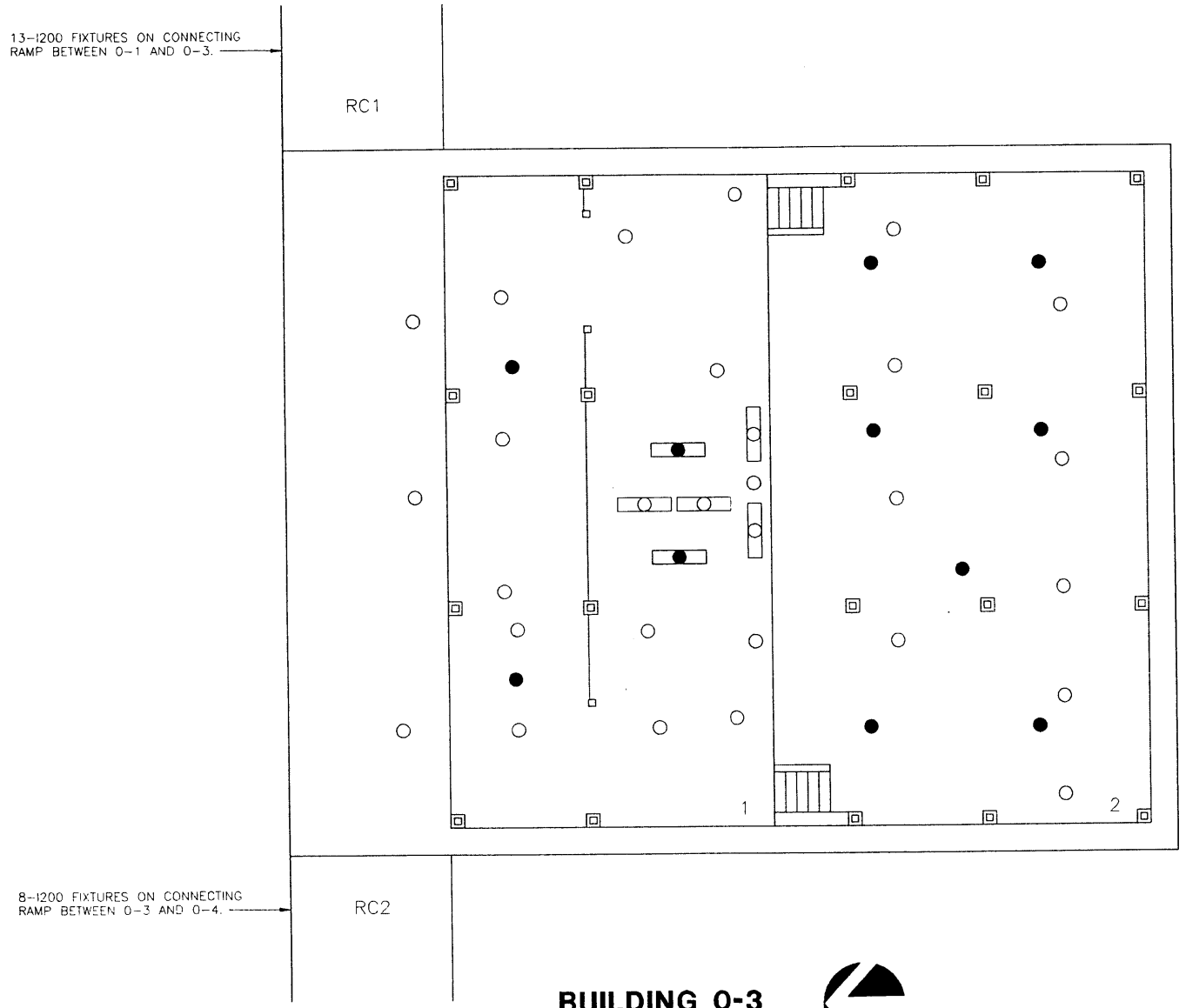
KEY PLAN

V91



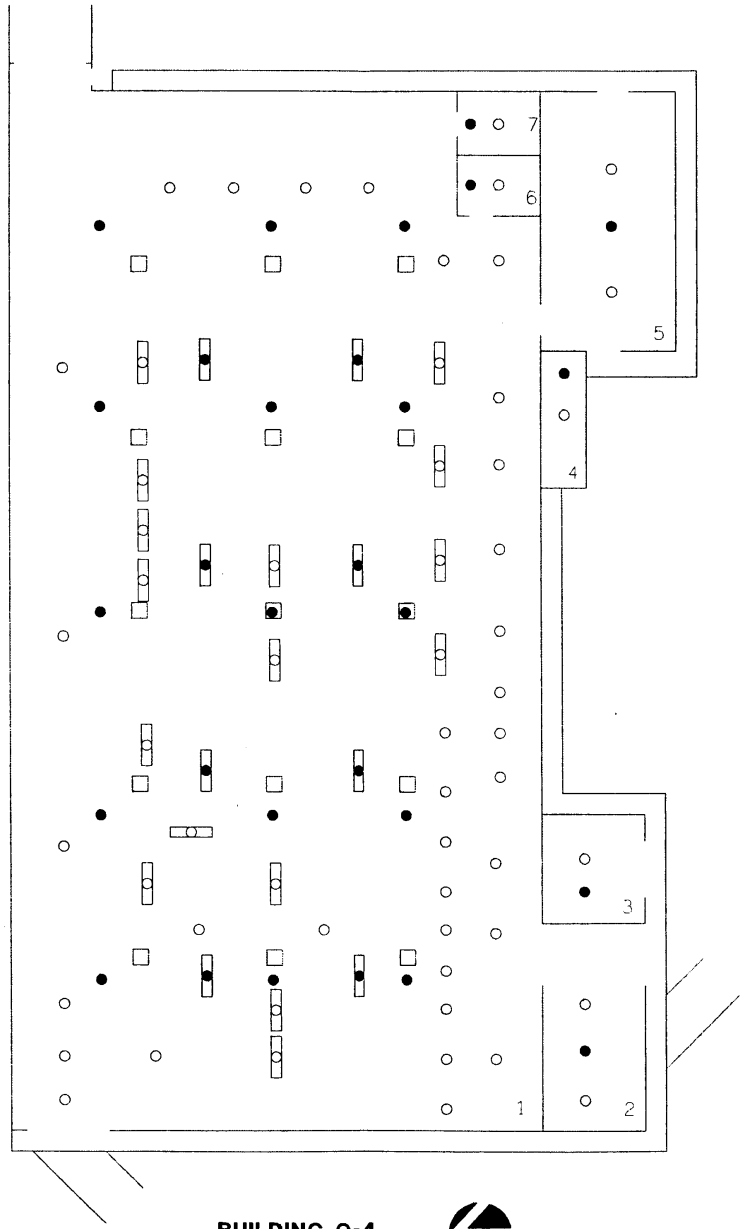
BUILDING O-1

(EXISTING / UPGRADE)

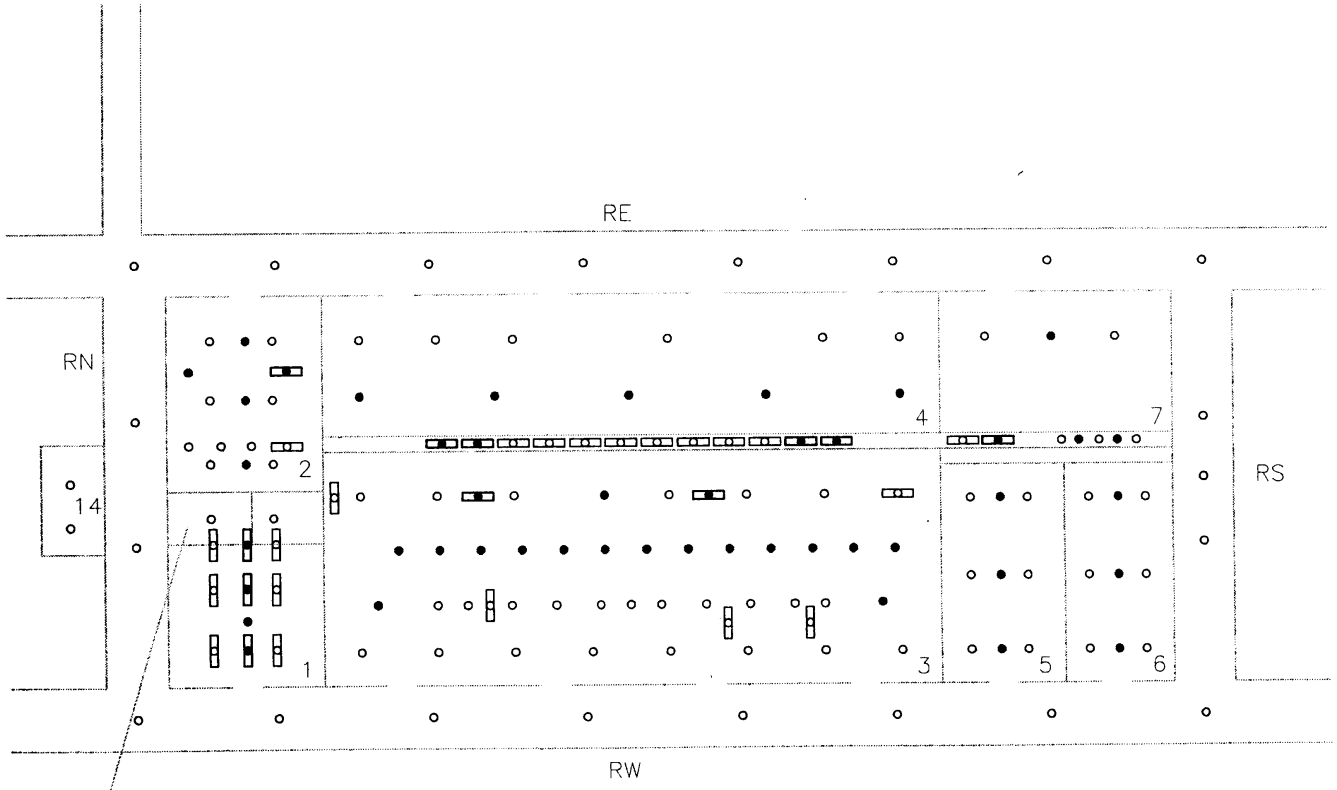


BUILDING 0-3

(EXISTING/UPGRADE)



BUILDING O-4
(EXISTING/UPGRADE)

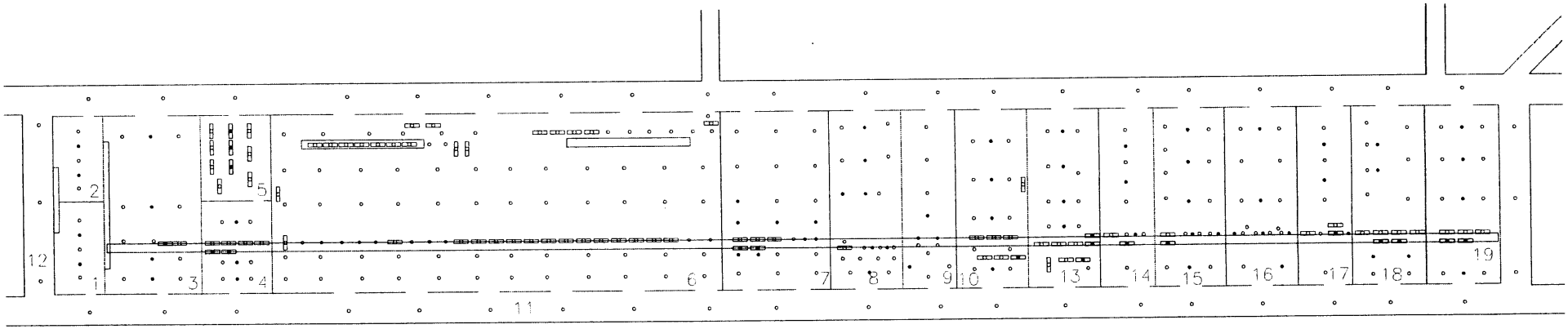


SEWAGE EJECTOR PUMP HOUSE

PARTIAL PLAN
UNDER MEZZANINE

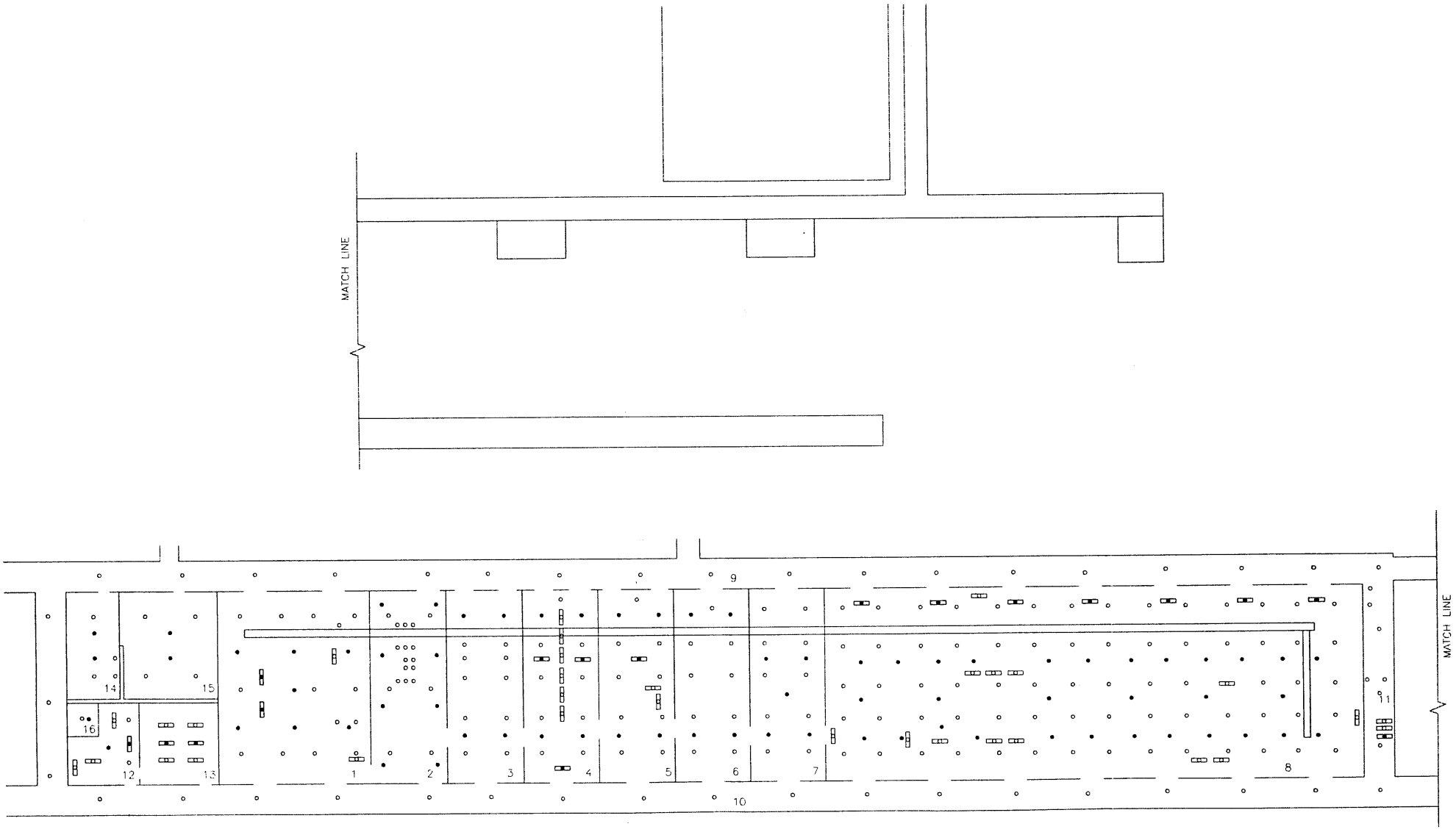
BUILDING X-8

(EXISTING/UPGRADE)



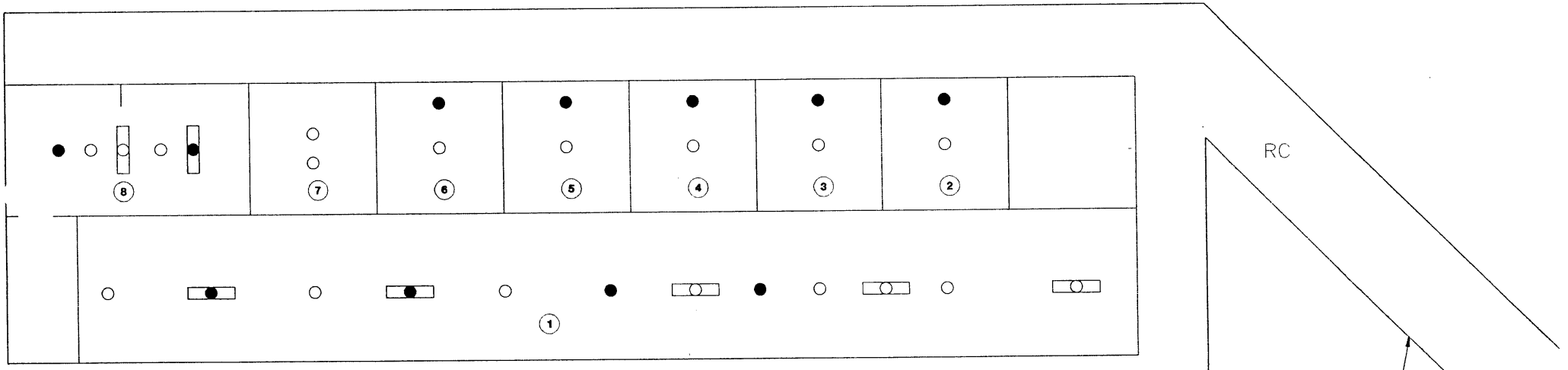
BUILDING X-14

(EXISTING/UPGRADE)



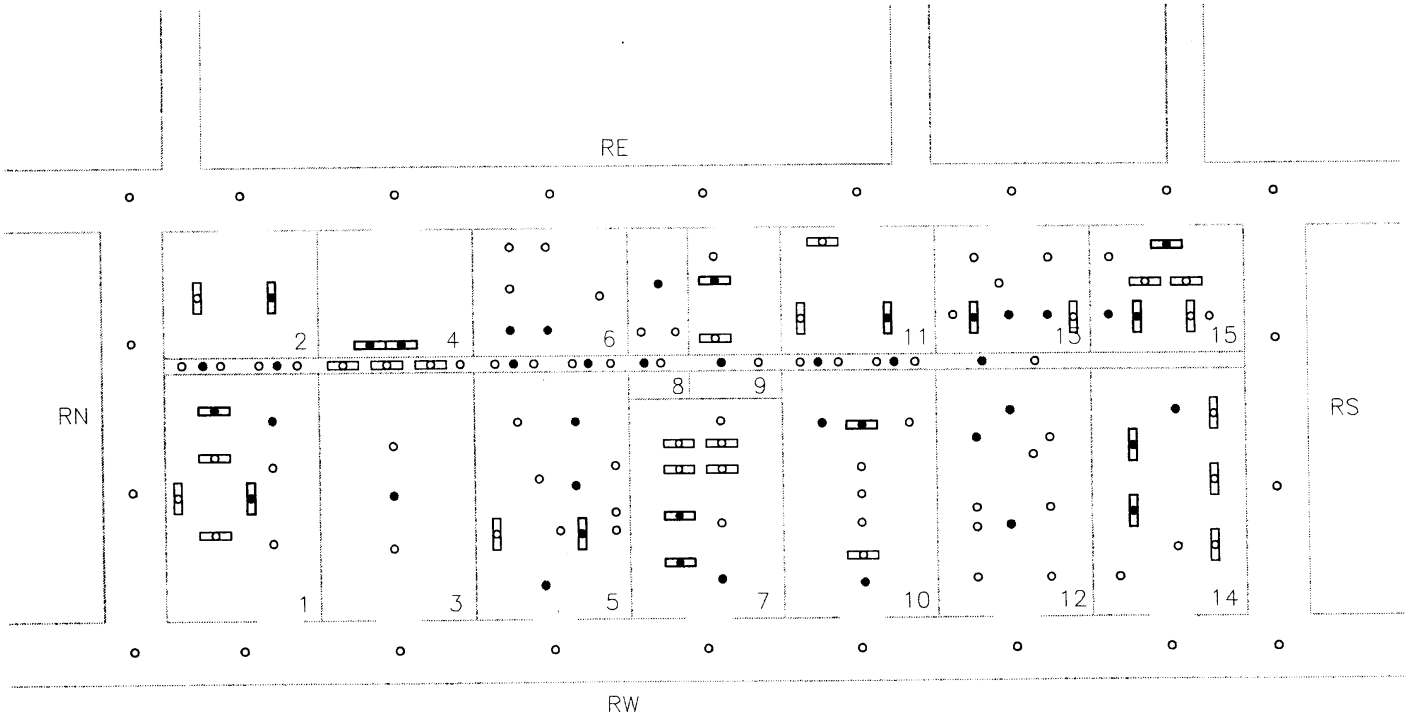
BUILDING X-18
(EXISTING/UPGRADE)

V-97



BUILDING X-26
(EXISTING/UPGRADE)

5-1200 FIXTURES ON CONNECTING RAMP BETWEEN X-26 AND X-27.

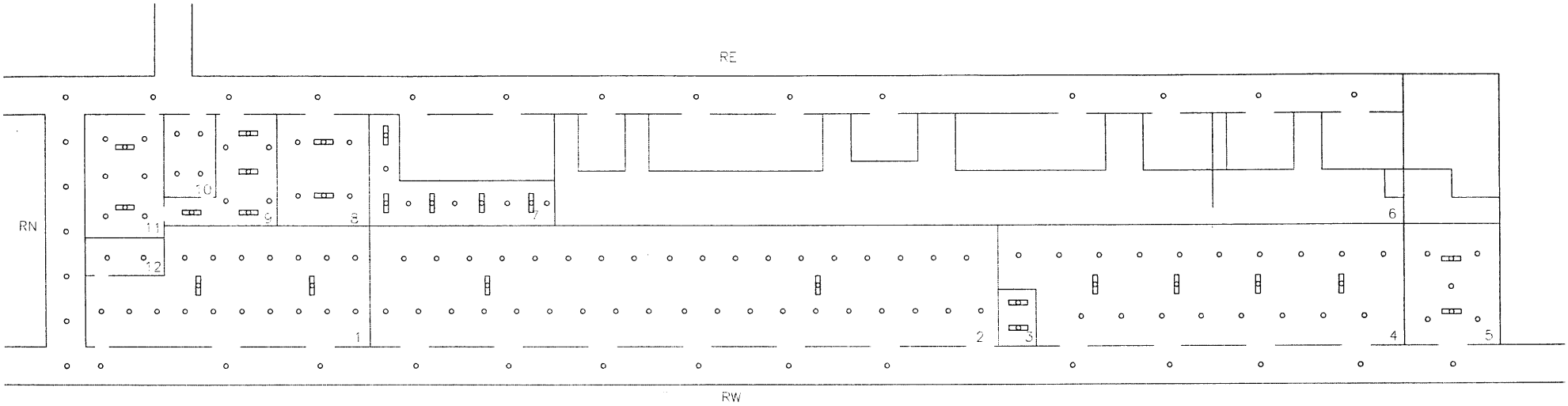


BUILDING X-27

(EXISTING/UPGRADE)


SECOND FLOOR PLAN
THIRD FLOOR PLAN
BUILDING X-41
(EXISTING/UPGRADE)
V-100

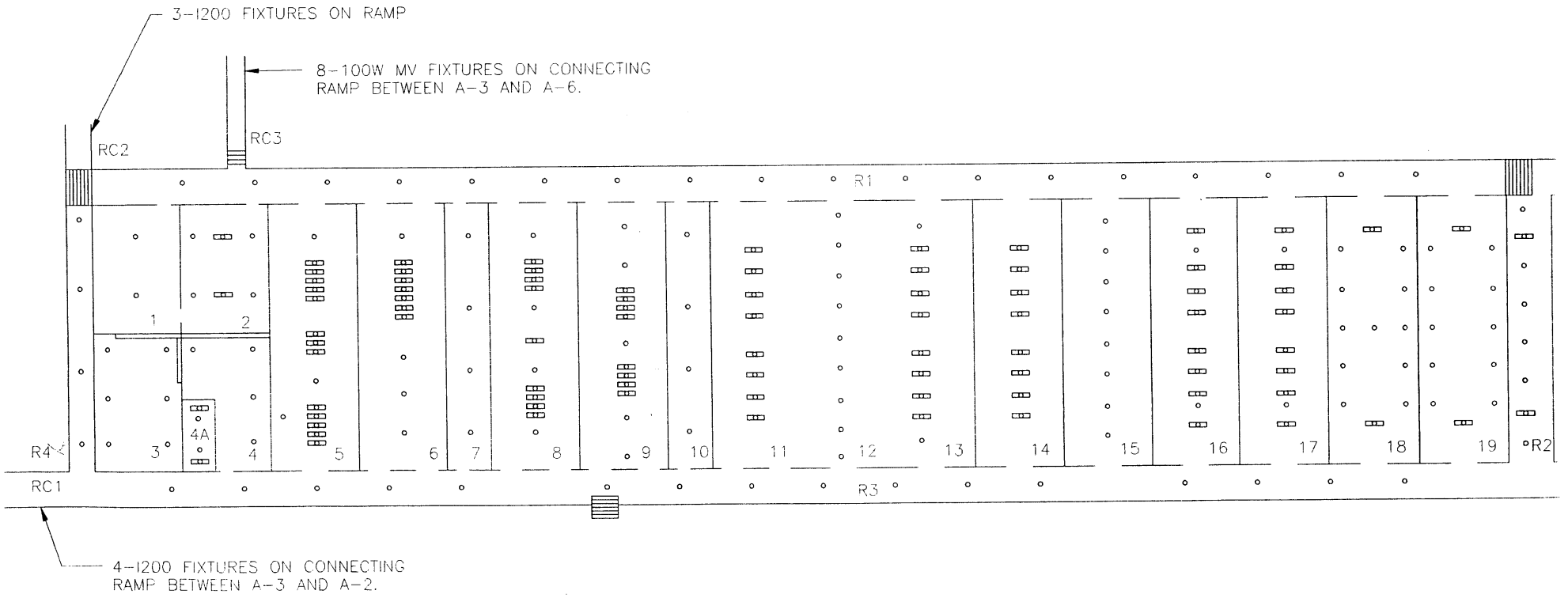
Appendix 7 - Drawings - Proposed Alternate 6



BUILDING A-2

(ALTERNATE #6)

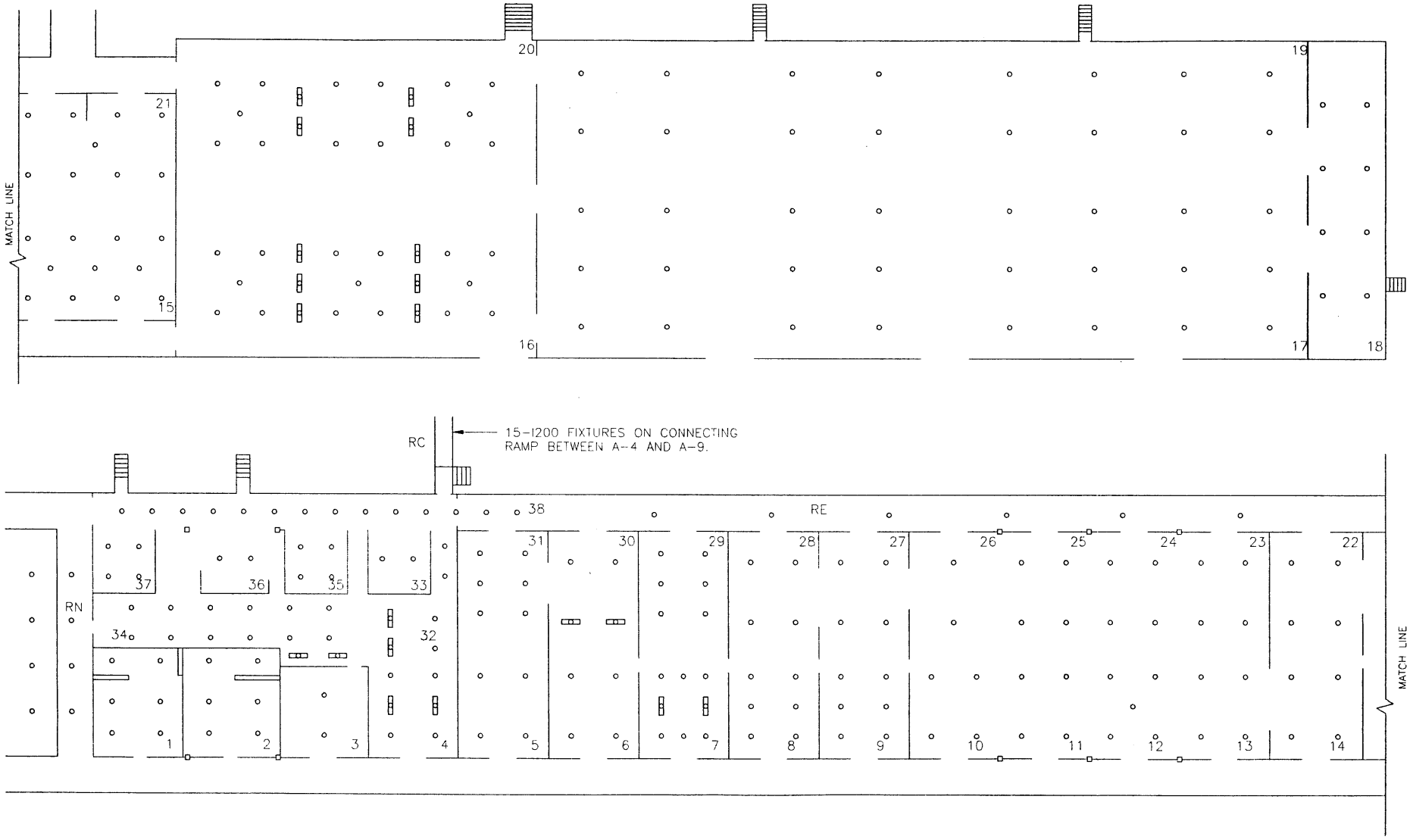
V-102



BUILDING A-3

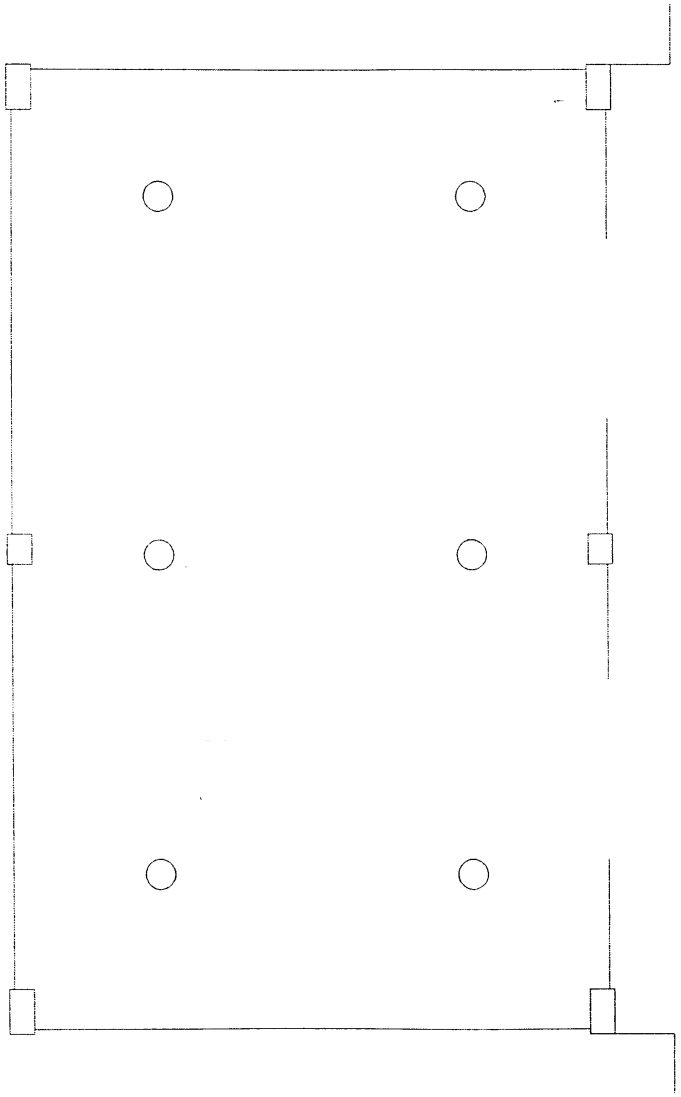
(ALTERNATE #6)

v-703



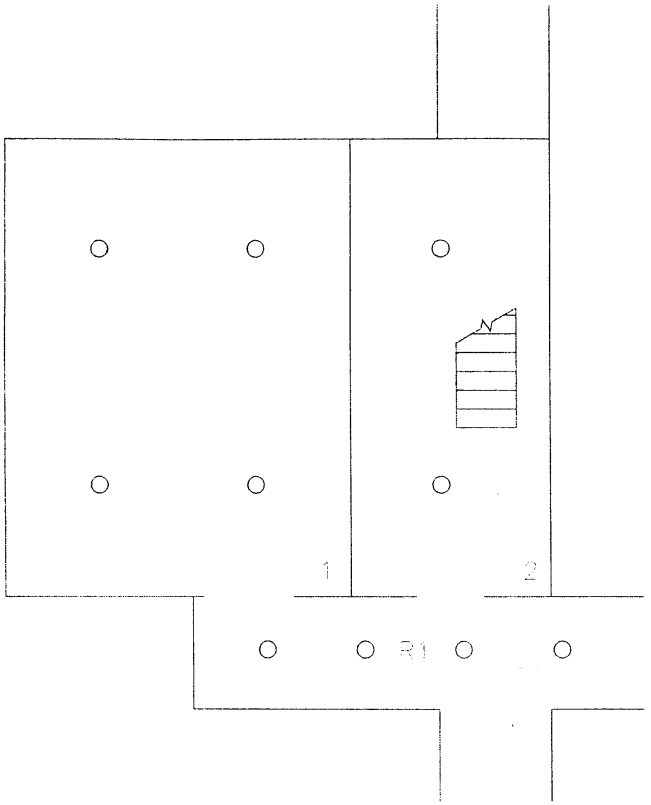
BUILDING A-4
(ALTERNATE #6)

V-104

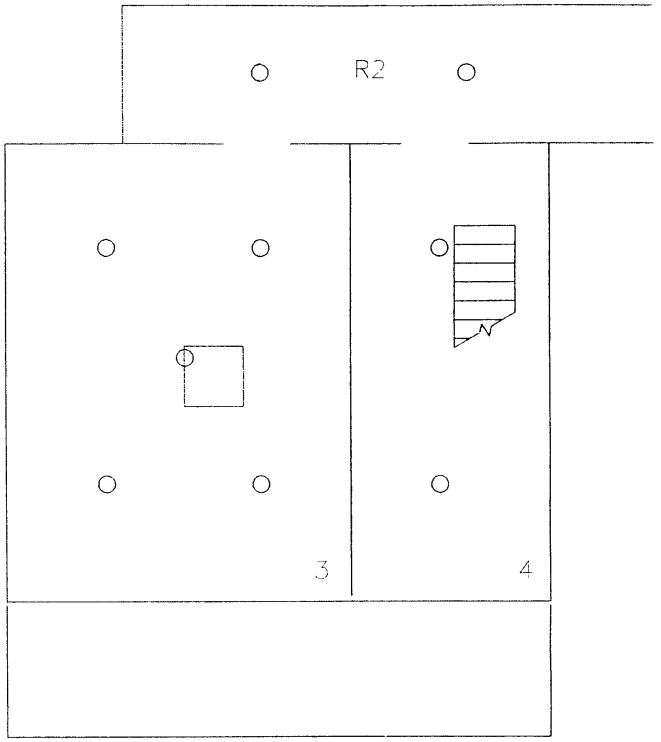


BUILDING A-6

(ALTERNATE #6)



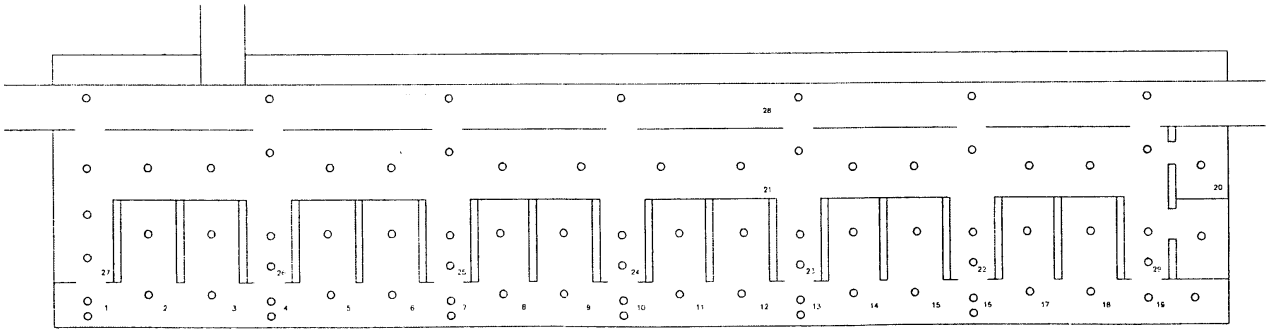
FIRST FLOOR PLAN



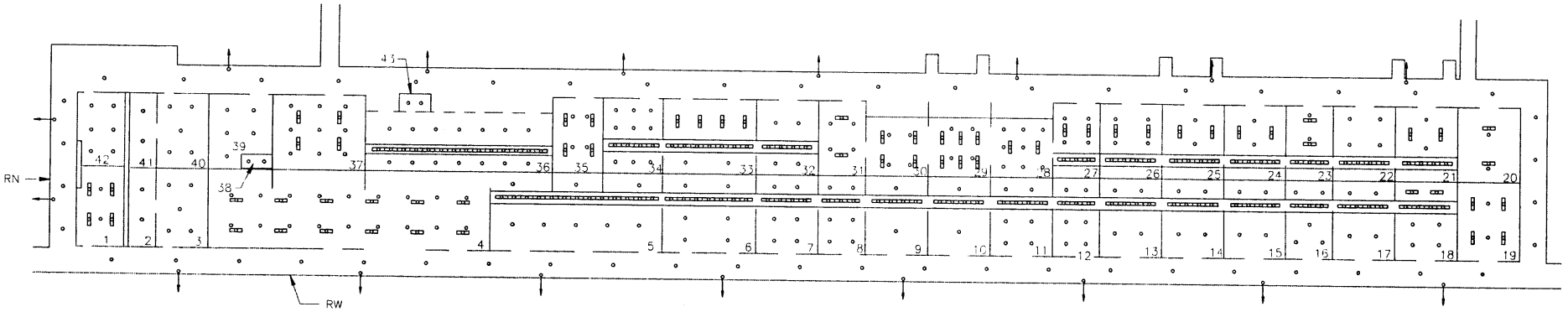
SECOND FLOOR PLAN

BUILDING B-10

(ALTERNATE #6)

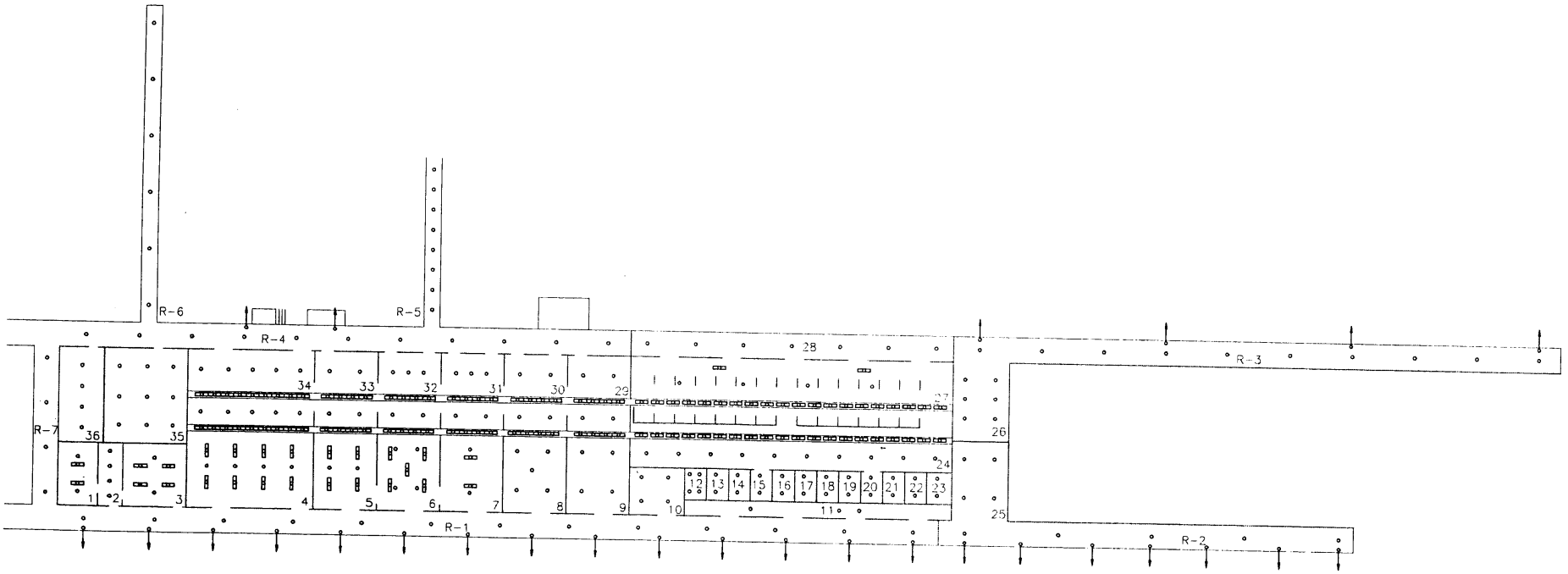


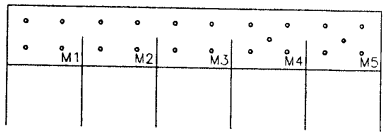
BUILDING B-12
(ALTERNATE 6)



BUILDING B-14

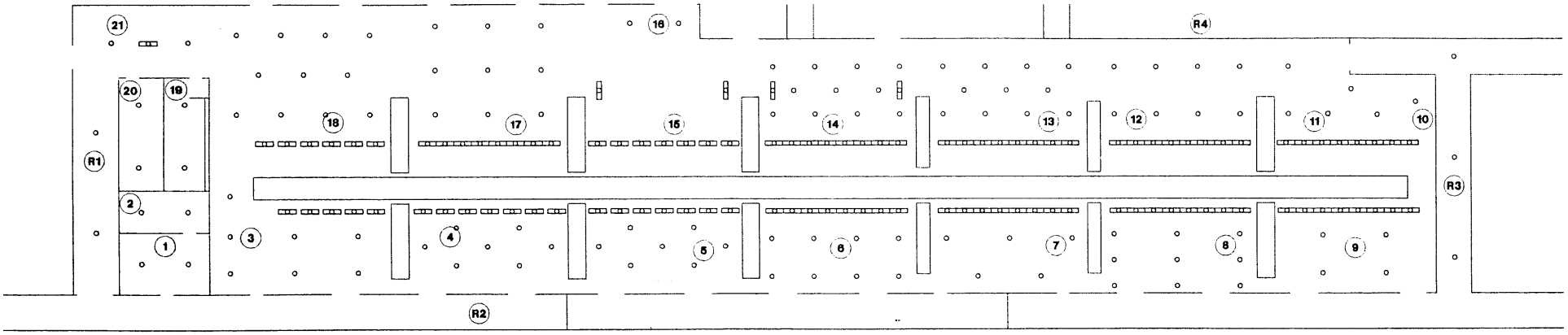
(ALTERNATE #6)





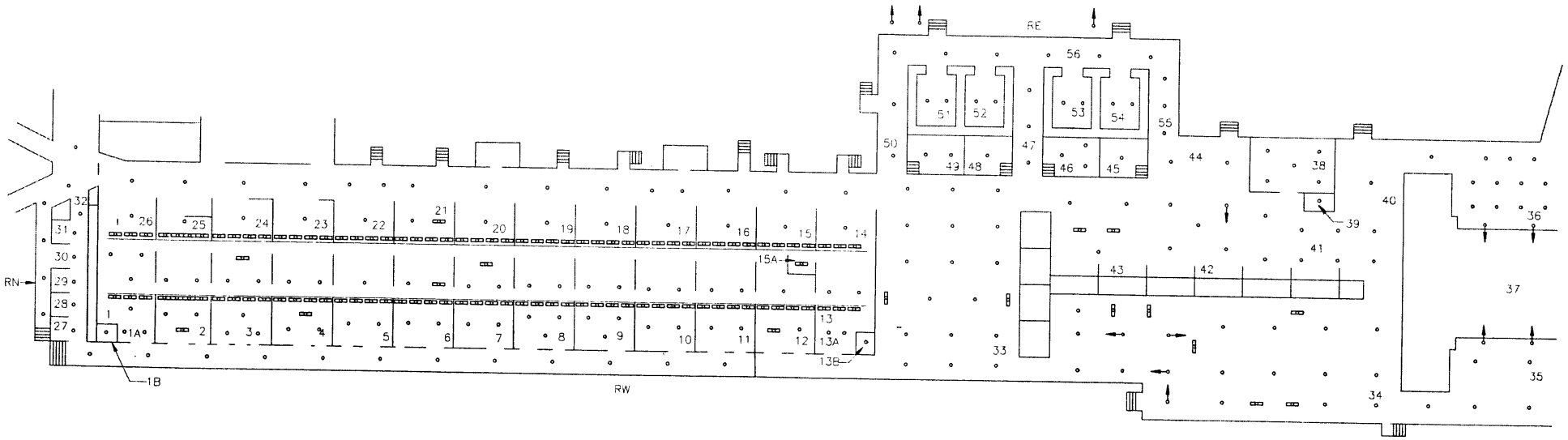
BUILDING B-18

(ALTERNATE #6)



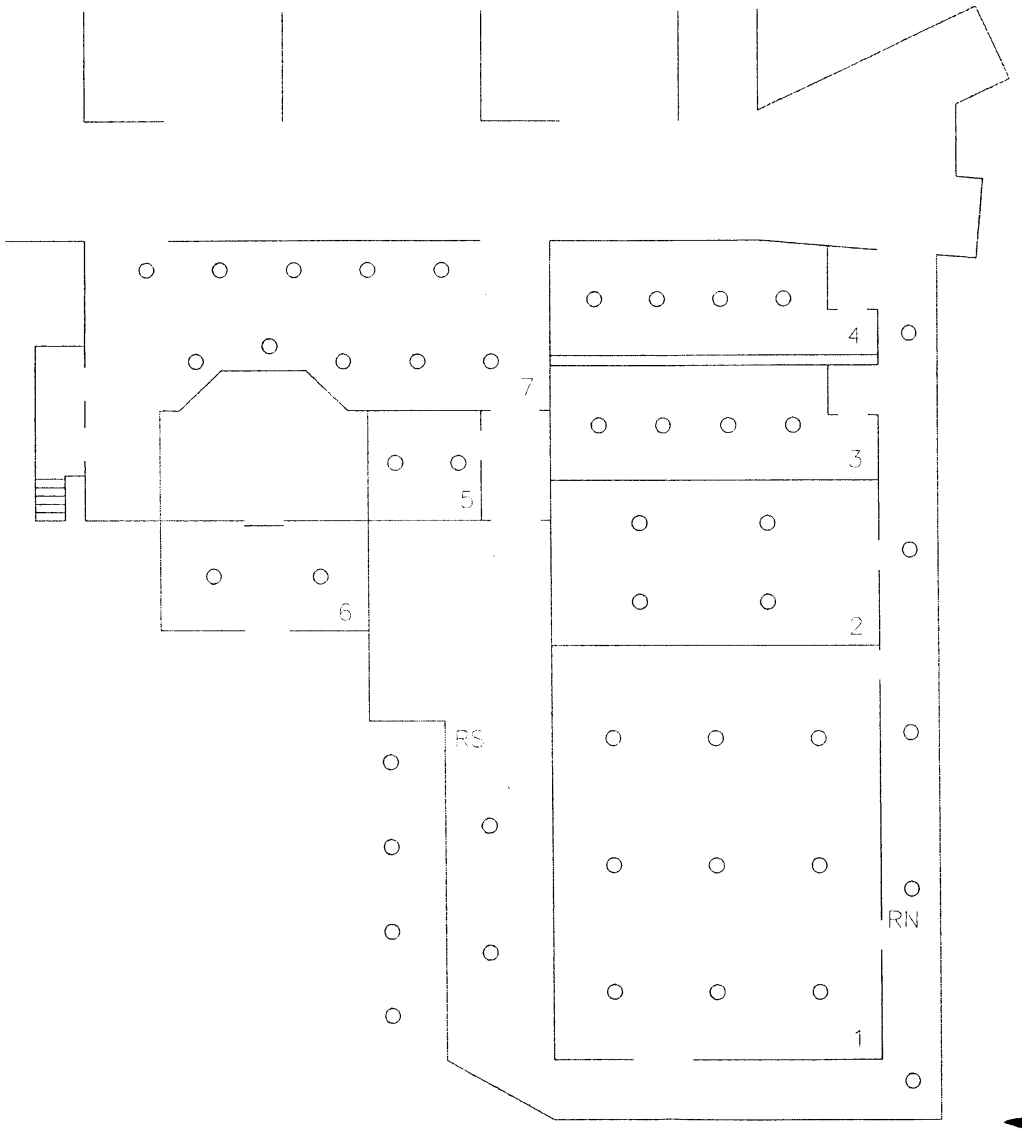
BUILDING D-3

(ALTERNATE #6)



BUILDING D-10

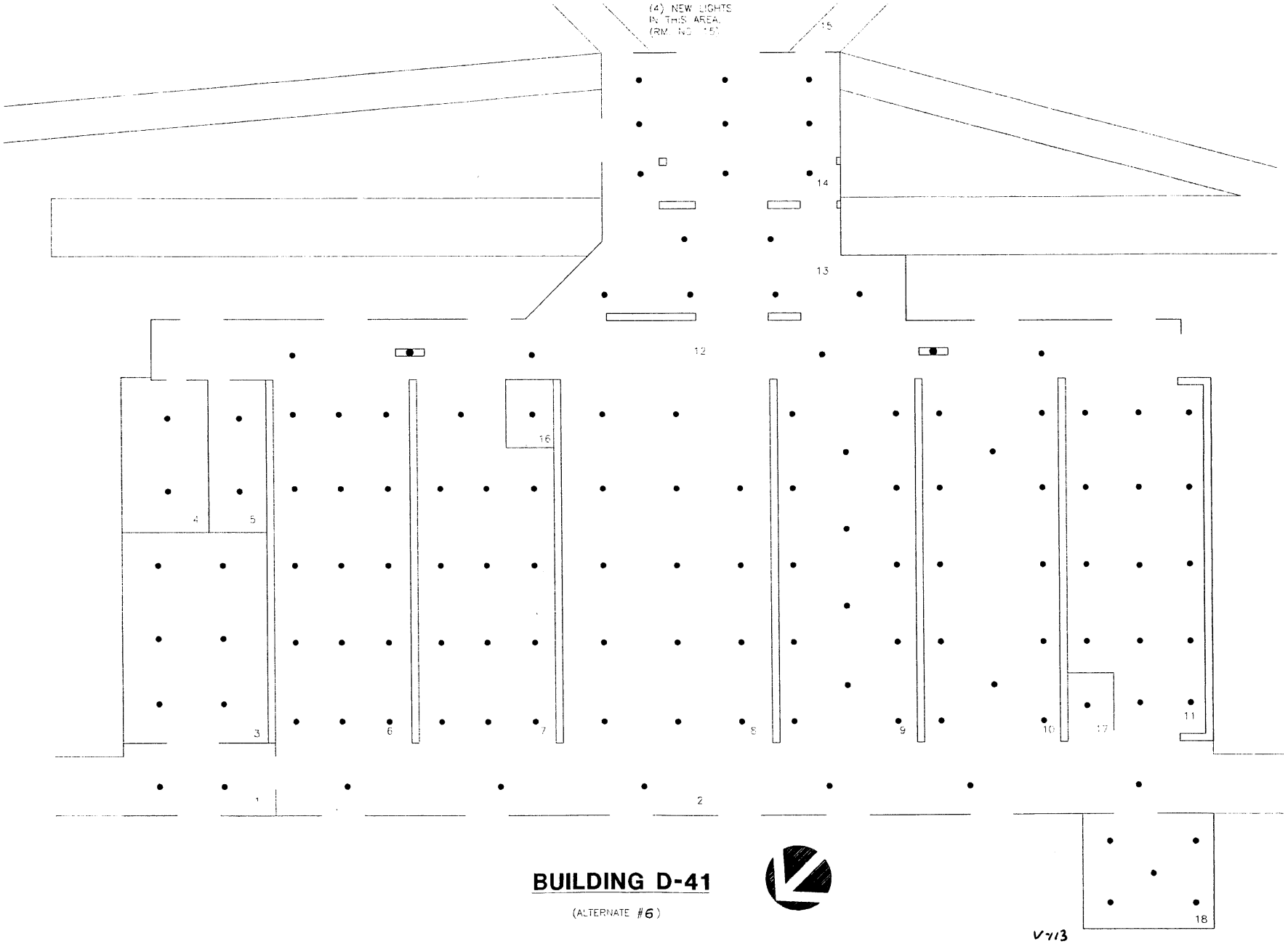
(ALTERNATE #6)



BUILDING D-16

(ALTERNATE #6)

V-112



BUILDING D-41

(ALTERNATE #6)

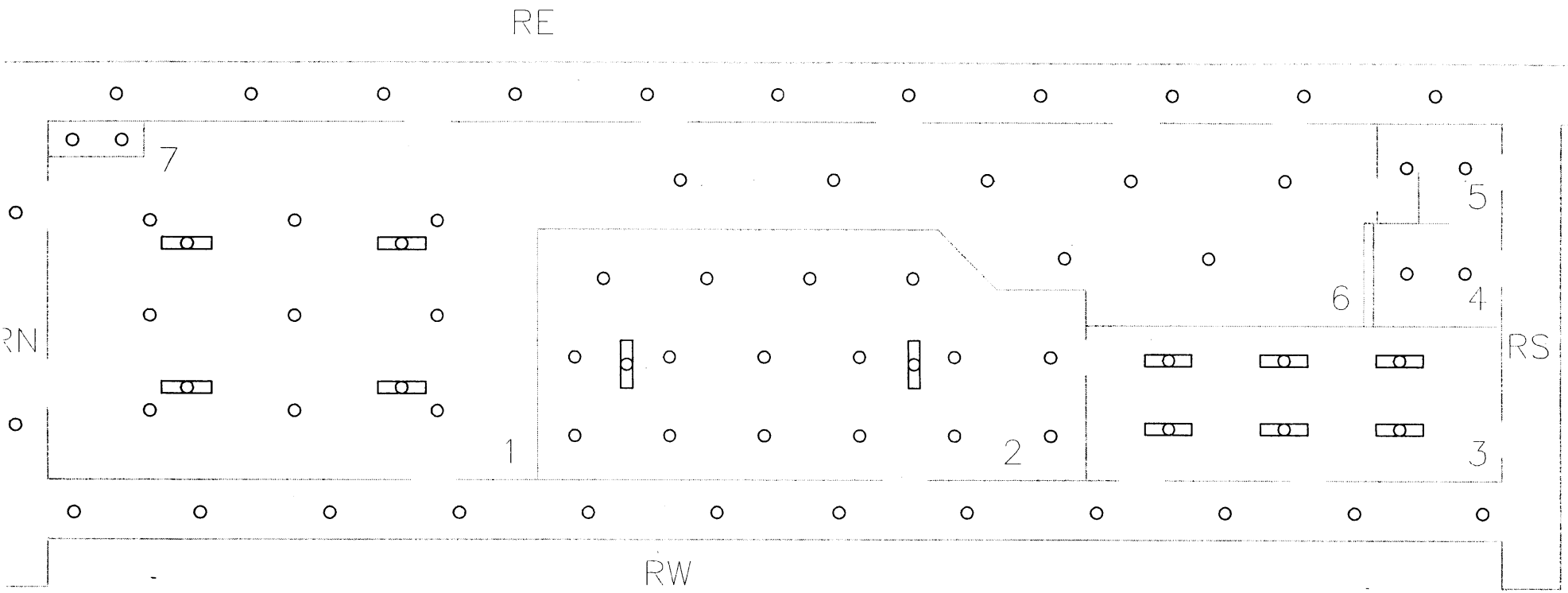
V713



BUILDING H-81

(ALTERNATE #6)

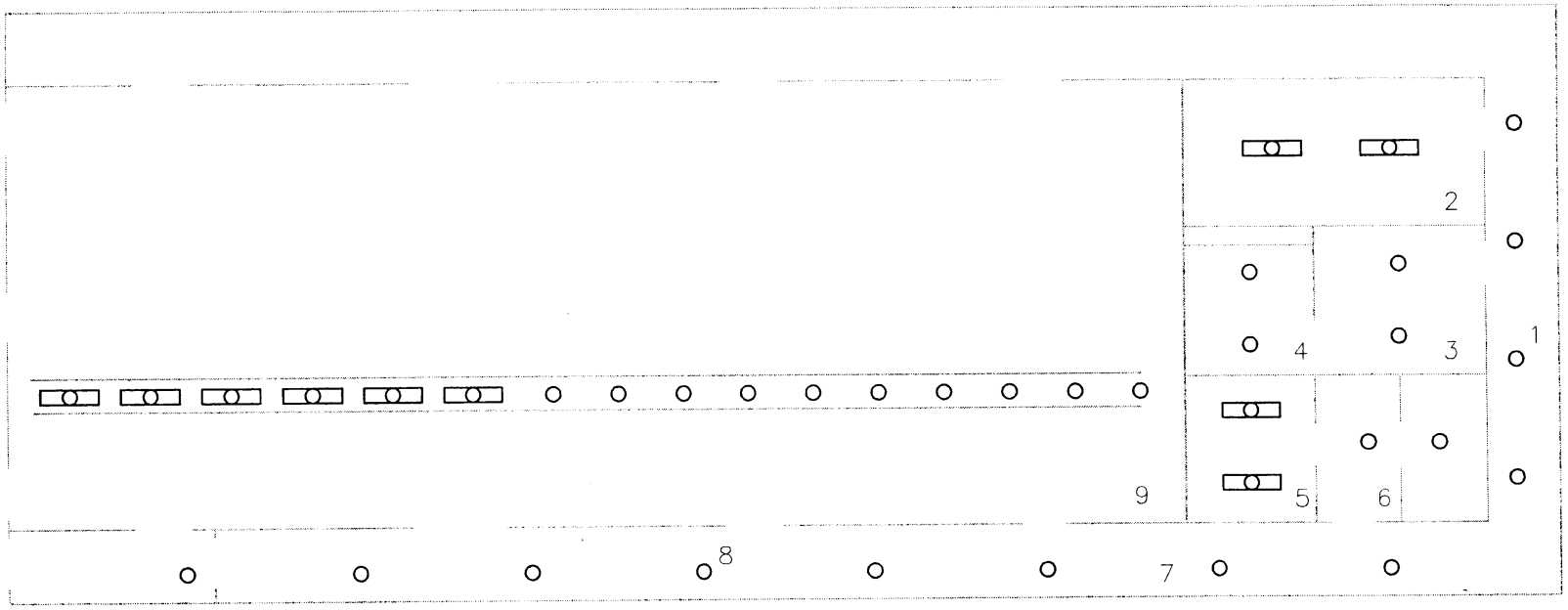
V-114



BUILDING H-111

(ALTERNATE #6)

V-115



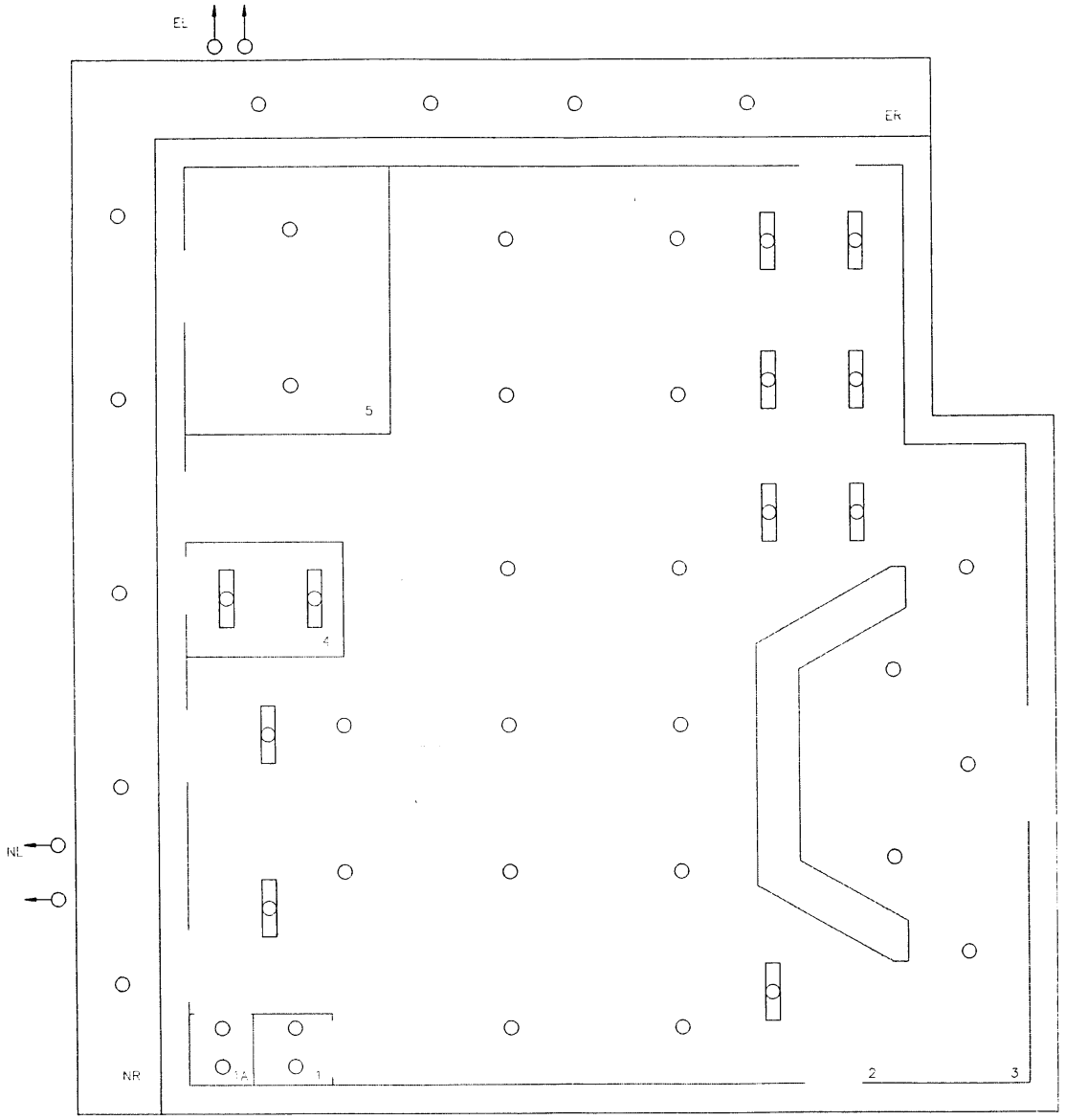
BUILDING H-115-3

(ALTERNATE #6)



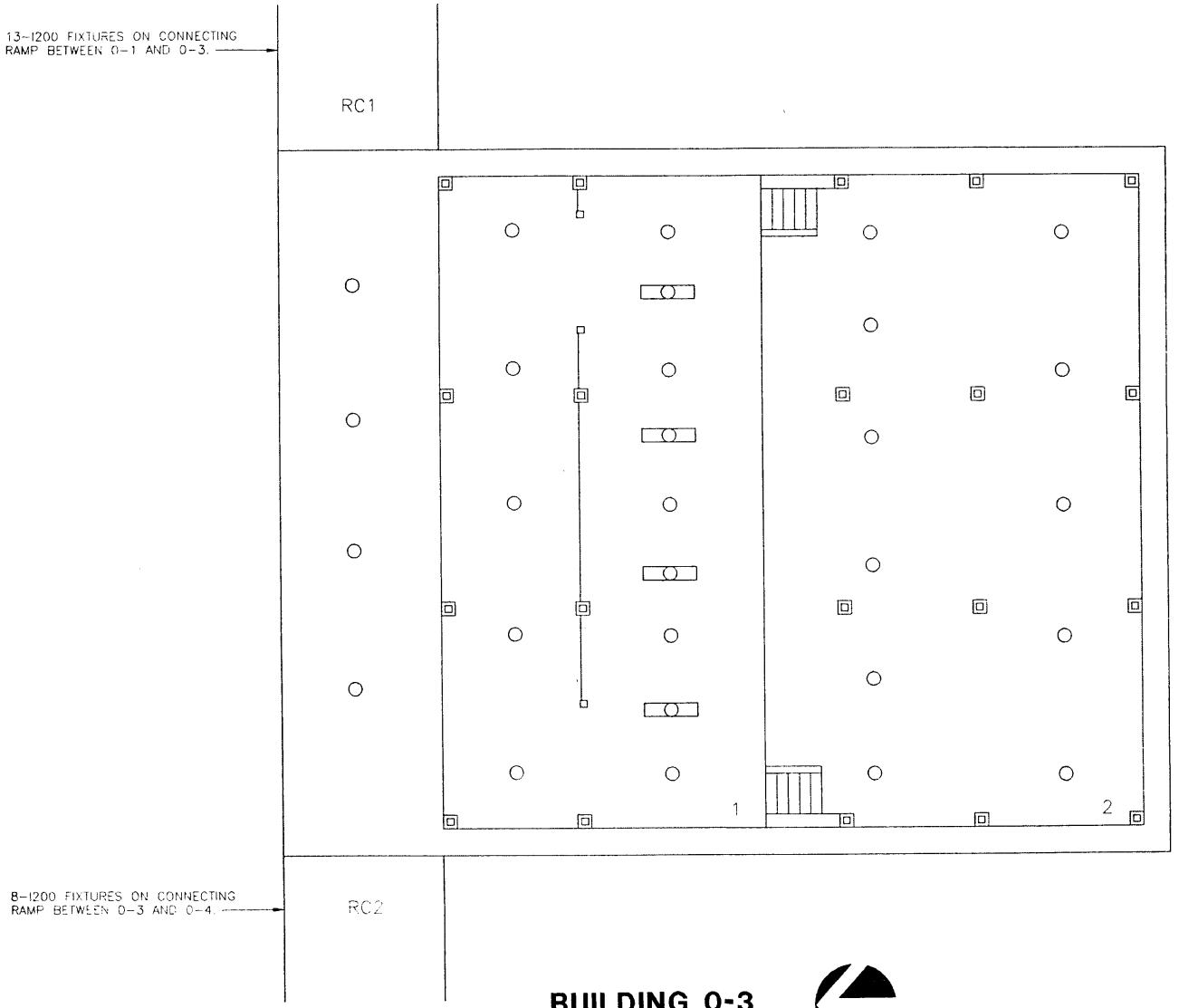
KEY PLAN

V-116



BUILDING O-1

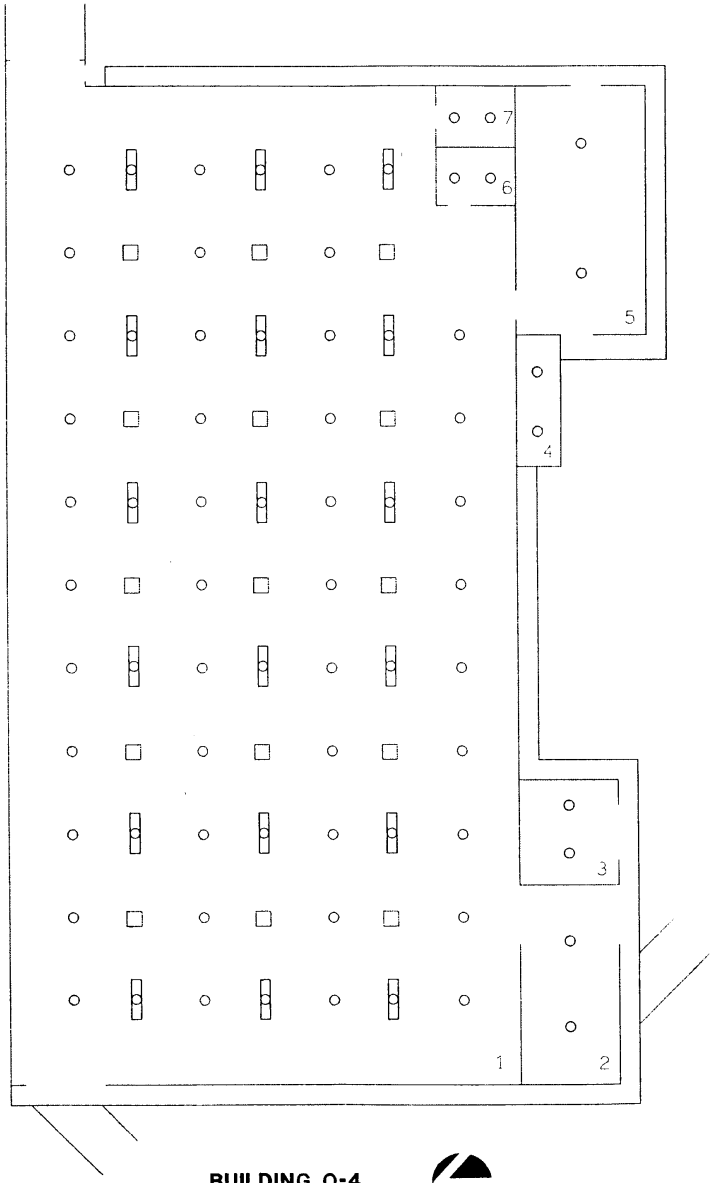
(ALTERNATE #6)



BUILDING 0-3

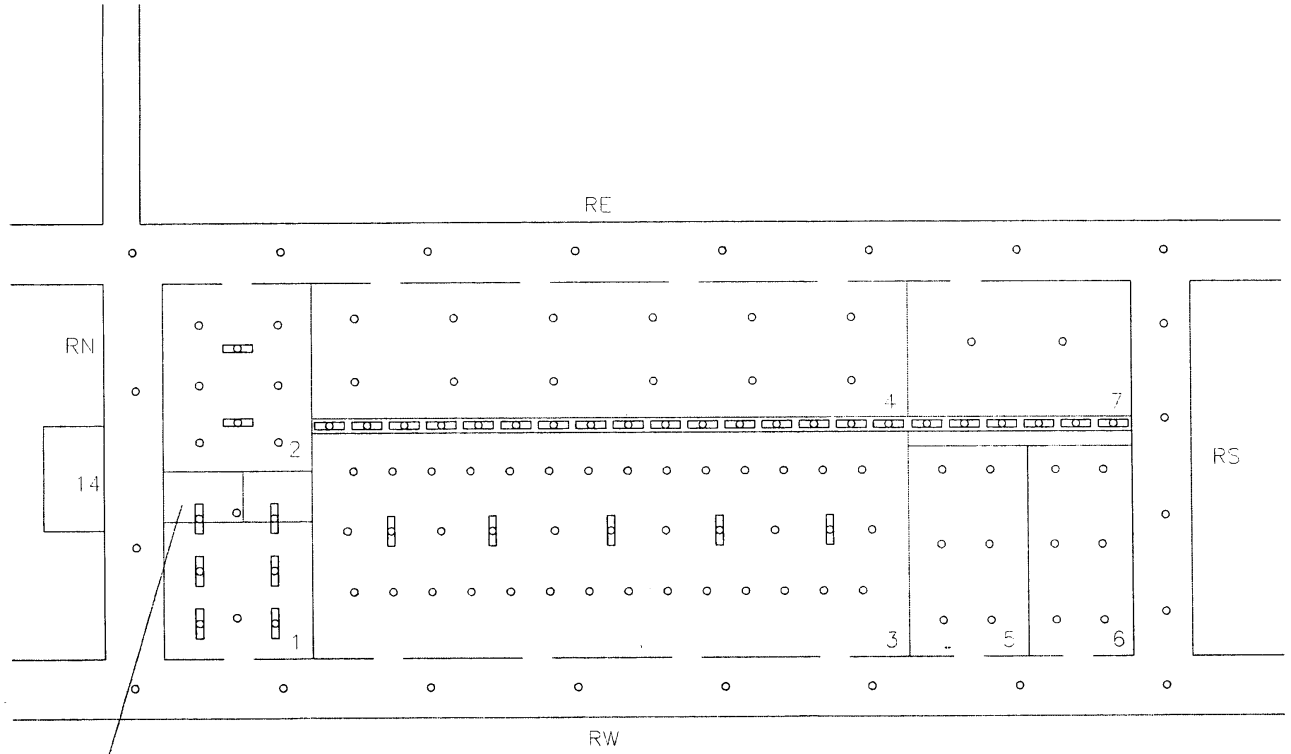
(ALTERNATE #6)

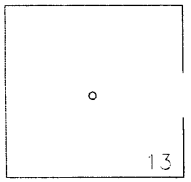
V Y/8



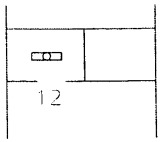
BUILDING O-4
(ALTERNATE #6)

V-119





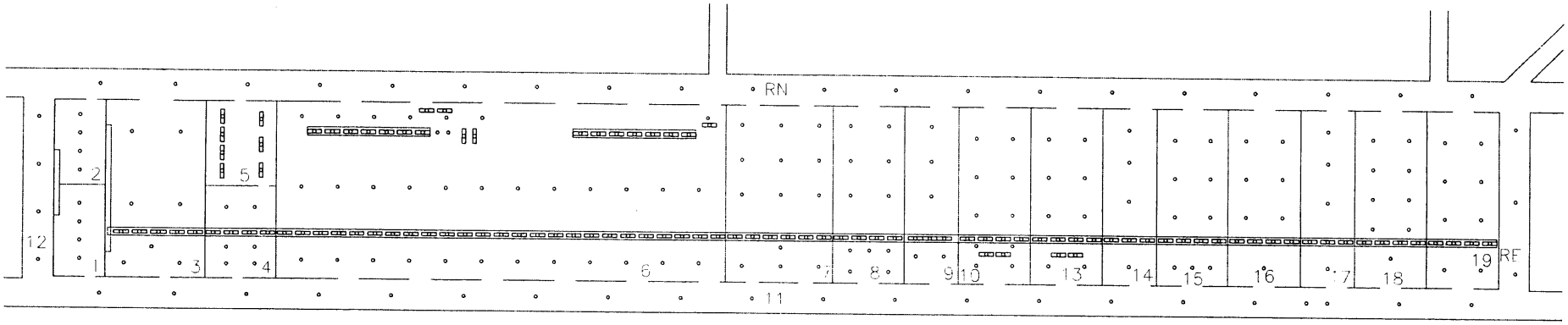
SEWAGE EJECTOR PUMP HOUSE



PARTIAL PLAN
UNDER MEZZANINE

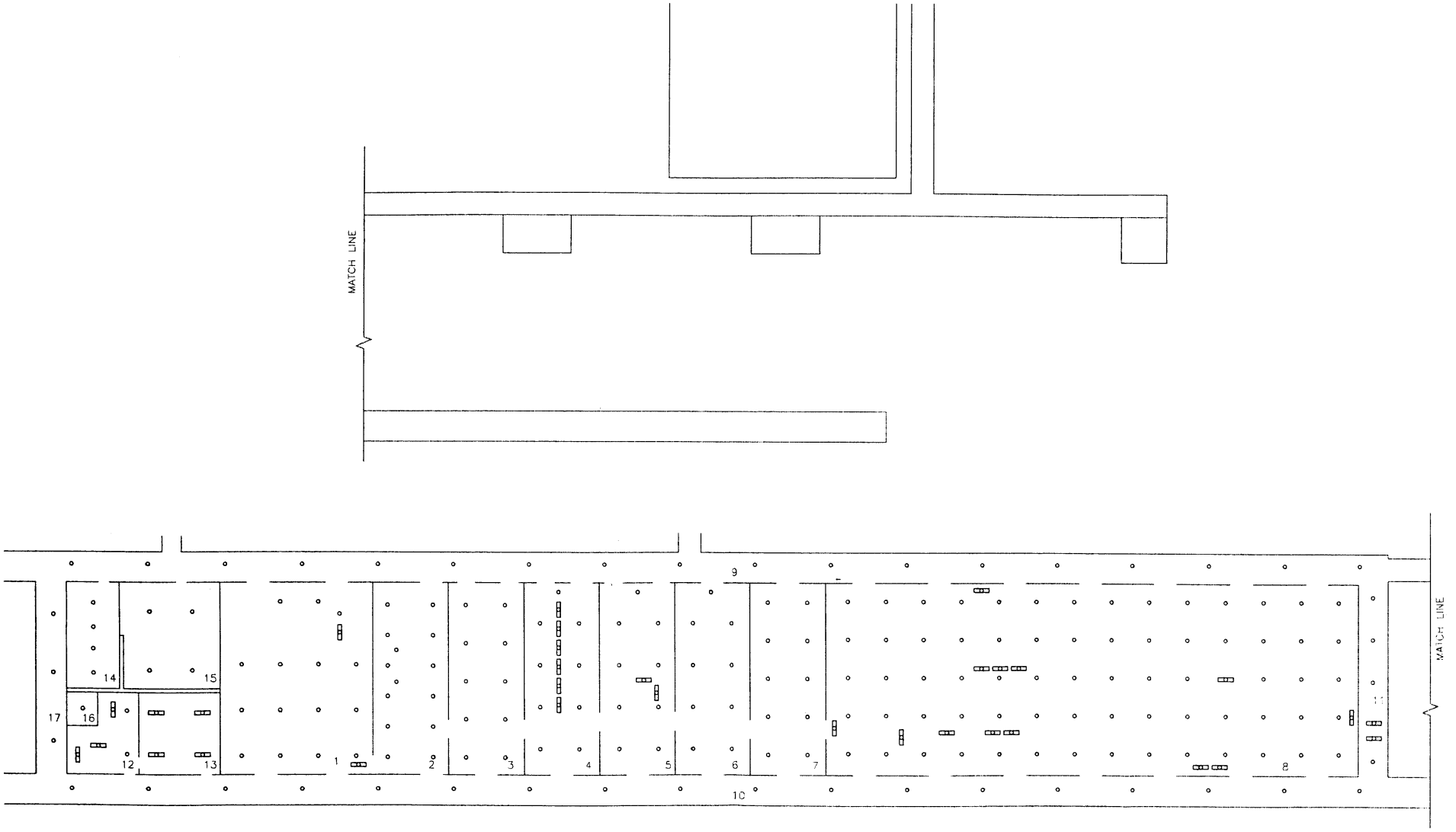
BUILDING X-8

(ALTERNATE #6)



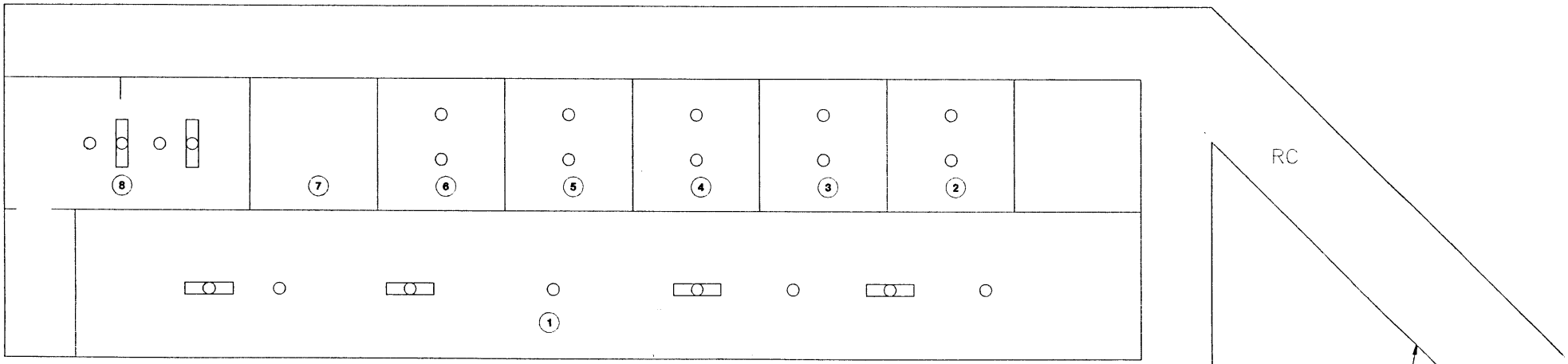
BUILDING X-14

(ALTERNATE #6)



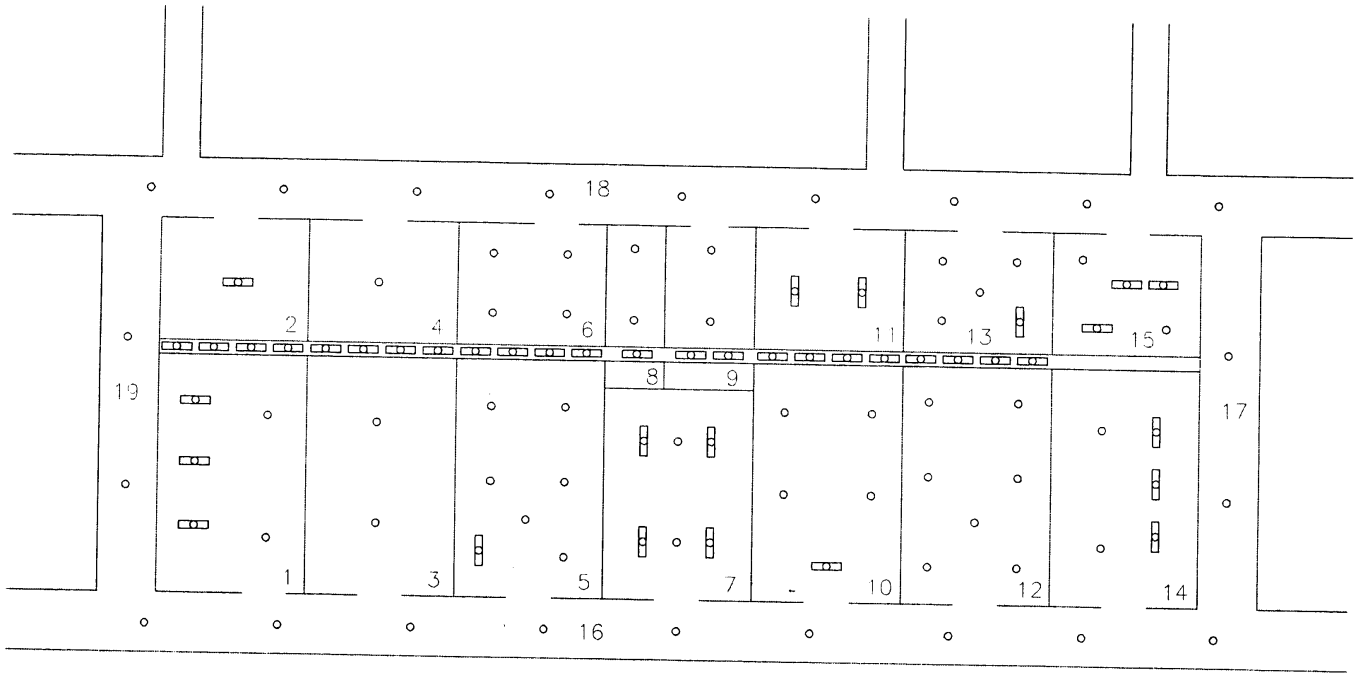
BUILDING X-18
(ALTERNATE #6)

V-12



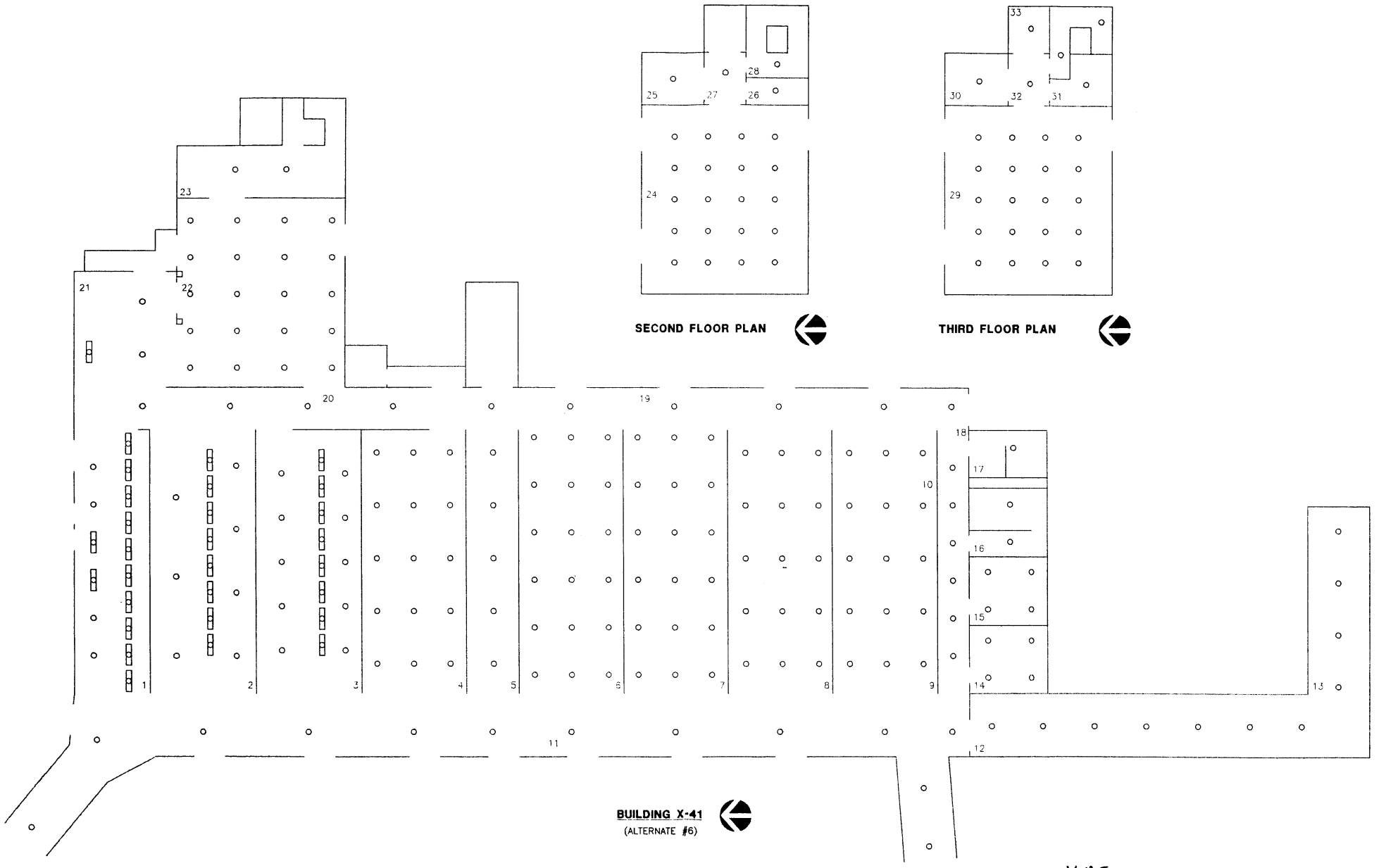
BUILDING X-26
(ALTERNATE #6)

5-1200 FIXTURES ON CONNECTING RAMP BETWEEN X-26 AND X-27.



BUILDING X-27

(ALTERNATE #6)


SECOND FLOOR PLAN
THIRD FLOOR PLAN
BUILDING X-41
(ALTERNATE #6)

V-25

Appendix 8 - Telephone Conversation

Telephone Conversation

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608

JOHN WILSON #708-390-5107
Conversation With

ADVANCE BALLAST
Representing

MILAN - LIMITED ENERGY STUDY
Project Name

MILAN, TENNESSEE
Location

CONTRACT No. DACA01-94-D-0007

File
Routing

93243-20
Project Number

6/29/94
Date

A.M.
Time

- FLUORESCENTS, DATA FOR BALLASTS:

ANSI WATTS = BALLAST WITH LAMP LOAD, ON A BENCH TOP, BUT WITHOUT THE ACTUAL FIXTURE. THE NUMBERS REPRESENT TOTAL INPUT WATTS.

- 32 WATT T8 FLUORESCENTS ARE HIGHLY EFFECTIVE IN REDUCING ENERGY CONSUMPTION.

- OCCUPANCY SENSORS REDUCES (OR SHORTENS) LAMP LIFE FOR FLUORESCENTS.

By: M.L.R.

Telephone Conversation

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608

KEATON WEBB #901-686-1537
Conversation With

File
Routing

MILAN PUBLIC UTILITIES
Representing

93243-20
Project Number

MILAN - LIMITED ENERGY STUDY
Project Name

7/19/94
Date

MILAN, TENNESSEE
Location

9:30 AM
Time

CONTRACT No. DACA01-94-D0007

P KEATON WILL SEND ME A COPY OF HIS UTILITY'S RATE SCHEDULE.

P MILAN ARMY AMMUNITION PLANT HAS A SINGLE POINT OF DELIVERY FOR ELECTRICITY, THUS ONLY ONE CUSTOMER CHARGE # 7.39/MO.

P DEMAND CHARGES ARE $7.63 FOR FIRST 1000 KW AND $8.67 ABOVE THAT. MILAN ARMY AMMUNITION PLANT IS IN THE 4000 KW RANGE.

P ENERGY IS $0.03124, BECAUSE THEY ARE ON TVA - STEADY & INEXPENSIVE.

By: M. E Richardson

Telephone Conversation

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608

Conversation With: AL MEREDITH # 404-913-3836	Routing: file
Representing: G.E. LIGHTING	Project Number: 93243-20
Project Name: MILAN - LIMITED ENERGY STUDY	Date: 7/94
Location: MILAN, TENNESSEE	Time: A.M.
	CONTRACT No. DACA01-94-D0007

P MERCURY VAPOR LAMPS ARE A POOR CHOICE FOR USE INSIDE A BUILDING BECAUSE THEY CONTINUE TO BURN WAY PAST A 50% REDUCTION IN LIGHT OUTPUT (50 LUMENS/WATT DOWN TO 20 LUMENS PER WATT).

P LEGISLATION HAS DONE AWAY WITH THE 40 WATT T12'S. 34 WATT T12'S WILL CONTINUE.

P LOWEST ENERGY FOR LIGHT OUTPUT AND LONG LIFESPAN IS H.P.S.

P AL STATED G.M. MANUFACTURES AUTOS USING HPS LIGHTING IN THEIR ASSEMBLY PLANTS. AL STATED PEOPLE GET USED TO THE COLOR.

By: M.L.R.

Telephone Conversation

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608

Conversation With: TOM MANTIA #904-373-0501
Representing: CROUSE HINDS
Project Name: MILAN - LIMITED ENERGY STUDY
Location: MILAN, TENNESSEE CONTRACT NO. DACA01-94-D-0007

Routing: file
Project Number: 93343-20
Date: 7/15/94
Time: P.M.

TP TOM CONFIRMS THE PROPER HAZARD CLASSIFICATION IS COMBUSTIBLE DUST, CLASS 2, DIVISION 1, GROUPS E, F, & G. DIVISION 1 IS FOR NORMALLY HAZARDOUS & DIVISION 2 IS FOR NOT NORMALLY HAZARDOUS. CLASS 2 FIXTURES ARE SIGNIFICANTLY CHEAPER THAN CLASS 1 FIXTURES. TOM WILL SEND ME A PRICE BOOK FOR THESE FIXTURES. IN VOLUME THE LIST PRICE CAN BE DISCOUNTED 30%.

TP PLEASE NOTE THAT THERE ARE NO CL. 2, 300 WATT INCANDESCENT FIXTURES

By: M. L. R.

Telephone Conversation

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608

Conversation With: A. CONRAD GODSHALL	Routing: File
Representing: PHILLIPS LIGHTING	Project Number: 93243-20
Project Name: MILAN - LIMITED ENERGY STUDY	Date: 7/19/94
Location: MILAN TENNESSEE CONTRACT No. DACA01-94-D-0007	Time: 8:35 A.M.

WE DISCUSS THE BLENDING OF HPS & FLUORESCENTS. CONRAD THINKS IT MAY NOT BE COMFORTABLE TO SOME PEOPLE TO HAVE THESE WHITE & YELLOW COLORS TOGETHER.

CONRAD STATED THAT THERE WOULD BE NO PROBLEM MIXING METAL HALIDE & INCANDESCENT OR FLUORESCENT.

34 WATT, T12 FLUORESCENTS SHOULD BE AROUND (NOT OUTLAWED) IN THE FORSEEABLE FUTURE.

INSTANT START T8'S HAVE A SOMEWHAT REDUCED LIFESPAN OVER RAPID START T8'S.

GROUP RELAMPING IS HIGHLY RECOMMENDED.

By: M.L.R.

Telephone Conversation

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608

Conversation With: KEN HARRIS	Routing: File
Representing: SPECIFIED LIGHTING	Project Number: 93243-20
Project Name: MILAN - LIMITED ENERGY STUDY	Date: 7/18/94
Location: MILAN, TENNESSEE CONTRACT No. DACA01-94-D-0007	Time: A.M.

TP WE DISCUSS OCCUPANCY SENSORS, WHICH HE SELLS.

TP HE STATES THEY ARE NOT USUALLY USED IN MANUFACTURING, EXCEPT IN WAREHOUSES - WHERE THEY WORK WELL.

TP KEN SAYS THEY ARE MOSTLY MEANT FOR USE IN OFFICE BUILDINGS WITH A CLEAN ENVIRONMENT.

By: M.L.L.

Telephone Conversation

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608

Conversation With: TONY BATTAGLIA #205.690.2618	Routing: File
Representing: U.S. ARMY CORPS OF ENGRS.	Project Number: 93243-20
Project Name: MILAN-LIMITED ENERGY STUDY	Date: 8/15/94
Location: MILAN, TENNESSEE CONTRACT No. DACA01-94-D-0007	Time: 10:00 AM.

TONY & I DISCUSS MY PROGRESS & PHILOSOPHIES ON THE ANALYSIS TO DATE.

BRIEFLY, EXISTING CONDITIONS & BASELINE UPGRADE ARE THE STARTING POINT. ALTS. 2-6 EXAMINE USING M.H. & H.P.S. - H.D LIGHTING WITH T8 FLUORESCENTS OR RE-USING EXTG. FLUORESCENTS.

TONY & I DISCUSS REQUIREMENTS FOR ECIP & SYNERGISM MAY NOT REALLY APPLY. HOWEVER I WILL PROCEED AS IF THEY DO FOR NOW. ONE THING - FOR AN ECO TO BE CONSIDERED => ALL COMPONENTS MUST PASS REQUIREMNTS. ECIP - LIGHTING SIR 1.25, PAYBACK <15 YEARS. VERIFY WE HAVE JAN. 94 GUIDANCE.

By: M. L. R.

Telephone Conversation

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608

Conversation With: MIKE ROBINSON #901-686-6727
Representing: MARTIN MARIETTA ENVIRON.
Project Name: MILAN LID. EN. STUDY
Location: MILAN, TENN.

Routing:
Project Number: 10-24-94
Date: 10:00AM
Time:

THEY PRESENTLY DISPOSE OF PCB BALLASTS BY COLLECTING & PAYING A DISPOSAL FEE PER POUND OF #1.50

THEY PRESENTLY DISPOSE OF FLUOR. BULBS AT A RATE OF #1.22 PER POUND. HE STATED A DRUM FULL IS A LITTLE OVER #700.

By: M. L. R.

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, FL 32608

Telephone Conversation

Sh 1 of

LAURIE CHASE # 800-808-4MTI
Conversation With

M.T.I / DIV. of WASTE MGT. SERV.
Representing

MILAN LTD. ENERGY STUDY
Project Name

MILAN, TENN.
Location

Routing

Project Number
10-24-94
Date

Time

TP THEY HAVE DISPOSAL SITES IN CALIFORNIA, PENNSYLVANIA, & FLORIDA FOR LAMPS.

TP THEY HANDLE THE DISPOSAL OF FLUORESCENT BULBS AT A PER FOOT BASIS:

- FOR STANDARD FLUOR. TUBES
  - < 20,000 L.F. 15¢/FT.
  - 20K to 30K L.F. 12¢/FT.
  - > 30K L.F. 10¢/FT.

(PRICING MAY BE CUMULATIVE ANNUAL VOLUME OR BID PRICE).

- FOR U-TUBES $1.00 EA.
- FOR COATED, DIPPED $2.00 EA. OR SLEEVE (WITH SPATTER SHIELD)

By: M. L. R.

Sh 2 of —

PRICING, CTD.

- COMPACT FLOOR W/ BUILT-IN STARTER $2.00 EA
- COMPACT FLUOR W/O BUILT-IN STARTER $1.00 EA
- HID LAMPS $3.00 EA

? THEY HAVE A SISTER COMPANY AETC THAT DOES BALLAST DISPOSAL, CALLED AETC. DISPOSAL IS IN NEW YORK. BALLASTS ARE DISPOSED OF PER POUND. THEIR PRICING INCLUDES THE WEIGHT OF A 55 GALLON DRUM AND TRANSPORTATION.

NOTE: 55 GALLON DRUM = 40 LBS
ALSO A 55 GALLON DRUM CAN HANDLE
200 BALLASTS FOR A 4 FOOT FIXTURE
OR 76 BALLASTS FOR A 8 FOOT FIXTURE

Sh 3 of ___

DISPOSAL COSTS AS FOLLOWS:

- PCB BALLASTS, < 500 # @ 88 ¢/LB.
  500 - 999 @ 84 ¢/LB, & > 1000 # @ 70 ¢/LB
- NON-PCB BALLASTS < 500 # @ 72 ¢/LB.
  500 - 999 @ 69 ¢/LB, & > 1000 # @ 66 ¢/LB

Appendix 9 - Entry/Exit Interviews

MILAN ARMY AMMUNITION PLANT
MILAN, TN
LIMITED ENERGY STUDY
FIELD SURVEY SCHEDULE
JUNE 7 - JUNE 16, 1994

JUNE 7, 1994

1:30 - 3:00 PM	ENTRY INTERVIEW
3:00 - 5:30 PM	SURVEY BUILDINGS X-8 & X-14

JUNE 8, 1994

7:00 - 11:30 AM	SURVEY BUILDINGS X-18 & X-26
11:30 - 12:30 AM	LUNCH
12:30 - 5:30 PM	SURVEY BUILDINGS X-27, X-41 & O-1

JUNE 9, 1994

7:00 - 11:30 AM	SURVEY BUILDINGS O-3 & O-4
11:30 - 12:30 PM	LUNCH
12:30 - 5:30 PM	SURVEY BUILDINGS H-81, H-111, & H-115

JUNE 13, 1994

7:00 - 11:30 AM	SURVEY BUILDINGS A-2 & A-3
11:30 - 12:30 PM	LUNCH
12:30 - 5:30 PM	SURVEY BUILDINGS A-4, A-6, & B-10

JUNE 14, 1994

7:00 - 11:30 AM	SURVEY BUILDINGS B-12 & B-14
11:30 - 12:30 PM	LUNCH
12:30 - 5:30 PM	SURVEY BUILDINGS B-18, D-3, & D-10

JUNE 15, 1994

7:00 - 11:30 AM	SURVEY BUILDINGS D-16 & D-41
11:30 - 12:30 PM	LUNCH
12:30 - 5:30 PM	FLEXTIME (RESURVEY, ETC.)

JUNE 16, 1994

7:00 - 11:30 AM	FLEXTIME (RESURVEY, ETC.)
11:30 - 12:30 PM	LUNCH
12:30 - 2:00 PM	EXIT INTERVIEW

cc: McCready
Battaglia
MR

MILAN ARMY AMMUNITION PLANT
MILAN, TN
LIMITED ENERGY STUDY
FIELD SURVEY ENTRY/EXIT
INTERVIEW AGENDA

JUNE 7, 1994
1:30 - 3:00 PM
ENTRY INTERVIEW

- Obtain records of the past 3 years (minimum) of the existing buildings' energy consumption.
- Obtain drawings of the existing buildings floor plans (scaled drawings).
- Obtain overall facilities site plan showing locations of buildings to be surveyed.
- Appoint a representative to provide building escort services.
- Discuss schedule of building visitations as proposed by AESE.
- Discuss any special requirements, concerns, etc. for building visitation.
- Discuss Survey Lighting Form as part of the intended procedures of the investigation/survey.

JUNE 16, 1994
12:30 - 2:00 PM
EXIT INTERVIEW

- Briefly examine completed Survey Forms.
- Discuss any obvious differences between the drawings and findings of the site survey.
- Discuss areas of probable energy conservation.
- Obtain Owners input and advice (from Facilities Engineering Division) regarding possible study pitfalls, difficulties with computer program, and future planning of building changes/upgrades.
- Discuss any specific Owner concerns about the report: Emphasis/Content? Appearances/Binding? Previous Report/Sample?
- Discuss any hidden pitfalls usually missed by consultants.

Affiliated Engineers SE, Inc.
3300 SW Archer Road
Gainesville, Florida 32608
(904) 376-5500 • FAX (904) 375-3479

MEETING NOTES

MILAN ARMY AMMUNITION PLANT LIMITED ENERGY STUDY Project	93243-20 Project #
Milan, TN City, State	June 15, 1994 Date
Entry Interview Type of Meeting	1 of 2 MAH Page Typist
June 7, 1994 Meeting Date	MB Copies

Present	Representing
Harold Thompson	MMOS
Brad McCready	MAAP - Army
Tom Moore	MMOS - Engineer
Don Barger	MMOS - Engineer
Michael Richarme	AESE
Carl Osberg	AESE

The purpose of this meeting was to have an entry interview and the following items were discussed.

1) Energy consumption records by "production line" was received and reviewed records, not available for individual buildings. Records are for the past 3 years.

2) MAAP work hours are 6:50 AM to 5:20 PM with a half hour lunch. Some buildings may be locked and need to coordinate access with supervisor at "production line".

3) Building X-41 is not a production facility, is not presently active and is a three story building.

4) Can not open any electrical devices within operating facility because of explosion risks.

5) Lighting levels in facilities are currently below lighting standards. Concerned that energy consumed by present fixtures will be compared with energy consumed by new fixtures at higher lighting levels. Must be careful in comparison.

6) Cameras can not be used inside or outside production facilities.

7) Need to wear safety glasses, ear plugs and leg stats where indicated.

8) Safety Department needs to review hand held light meter AESE proposes using inside each facility.

9) Use of measuring tape inside buildings is permitted.

10) Lighting floor plans of most existing buildings are not available.

11) Drawings of Buildings X-8 and X-14 were reviewed to determine what types of drawings are needed by A/E. It was determined that MMOS would provide floor plans, building sections and lighting plans if available of each building in study.

12) Light levels over conveyor belt verify along conveyor and per building.

13) Light level at standard work station is 50 fc. Current levels at inspection stations is 100 fc. A/E allowed to ask building supervisor questions regarding types of task at various work stations.

14) Change out has been occurring as fixtures break. Typically have been replacing explosion-proof incandescent with explosion-proof fluorescent.

15) Scope of project survey includes all rooms listed in May 1994 scope of work.

16) Facilities are closed Friday, Saturday, and Sunday with no access.

17) Table of contents/outline for report was distributed and will be discussed at exit interview.

The above constitutes the writer's understanding of the discussions of this meeting and conclusions reached. Corrections/errors should be noted to the writer within 5 working days.

Prepared By:

Carl L. Osberg, P.E.
Vice President

cc: Tony Battaglia
Brad McCready

Affiliated Engineers SE, Inc.

3300 SW Archer Road
Gainesville, Florida 32608
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MEETING NOTES

MILAN ARMY AMMUNITION PLANT LIMITED ENERGY STUDY Project	93243-20 Project #
Milan, TN City, State	July 13, 1994 Date
Exit Interview Type of Meeting	1 of 2 MAH Page Typist
June 15, 1994 Meeting Date	CO Copies

Present	Representing
Harold Thompson	MMOS
Brad McCready	MAAP - Army
Tom Moore	MMOS - Engineer
Michael Richarme	AESE

The purpose of this meeting was to have an exit interview, and the following items were discussed.

1) Completed survey forms were discussed. The majority of light fixtures on the project are 200 watt incandescent (explosion proof) fixtures. The potential for energy savings was discussed. There is a good opportunity to save energy with changeout of the incandescent fixtures to a high intensity discharge (HID) type fixture or to a fluorescent fixture. These fixtures are more efficient in their light output, or lumens output per watt input consumption.

2) Differences between the drawings and the findings of the site survey were discussed. Some of the buildings were upgraded with new lighting (mercury vapor - 100 watt) and also some were changed with addition of new walls. The drawings are quite old (40 years) and these differences were not unexpected.

3) We discussed that due to the large quantity of incandescent fixtures, it appeared to be very feasible to save energy with a different type of lighting.

   We discussed that due to the quantity of broken fixtures, ballasts, and lamps it may be difficult to show energy savings with a new lighting system versus actual energy consumption due to poor levels of existing lighting. AESE agreed to take this point into consideration during our analysis by allocating funds to repair and/or improve the existing lighting system prior to comparison with an alternative lighting scheme.

4) The Owner's input and advice were solicited on the possible pitfalls in this study. The biggest concerns were about economic justification due to the large expense of the fixtures involved, since they are explosion proof variety and therefore are expensive.

5) The Owner requested that we also emphasize the need to improve the poor lighting conditions as part of our project's justifications.

6) No previous reports or samples were available for review.

7) AESE discussed our proposed approach to this study. We propose to examine energy consumption based upon the kWh and kVA demand costs given to us by MMOS. We also proposed to determine new footcandle levels with the alternate proposed systems based upon some reasonable assumptions by the engineer in our analysis. Existing light fixtures will be assumed to be at some theoretical height which emulates existing conditions. These assumptions are necessary to make the analysis feasible with availability of existing computer programs/analysis tools to assist the engineer in calculating footcandles.

8) We discussed some investigation would be necessity to assure compatibility of the existing explosion detection monitors with new lighting obtained from HID or fluorescent lighting alternative ideas.

9) We discussed that any upgrade of the existing mercury vapor fixtures may need to be by complete replacement, rather than a ballast and lamp conversion to metal halide or high pressure sodium. Factory explosion proof ratings are at issue.

The above constitutes the writer's understanding of the discussions of this meeting and conclusions reached. Corrections/errors should be noted to the writer within 5 working days.

Prepared By:

Michael L. Richarme, P.E.

Michael L. Richarme. P.E.
Electrical Project Engineer

cc: Tony Battaglia
Brad McCready

Appendix 10 - Response to Review Comments on the Interim Submittal

RESPONSE TO REVIEW COMMENTS ON THE INTERIM SUBMITTAL FOR THE MILAN ARMY AMMUNITION PLANT FY93 LIMITED ENERGY STUDY

Response to comments from A. Battaglia

Gen 2a) Additional tabs should be used to separate sections and appendices. Each appendix should have its own tab.

This suggestion has been incorporated. Tabs and titles have been inserted to divide appendix and miscellaneous data sections.

2b) Pages should be identified throughout the report. The numbering used up through the narrative is fine. Beyond that, suggest using section and appendix page numbering, such as III-1, A-1, B-1, etc.

This suggestion has been incorporated. Pages are numbered as suggested.

pg 7 3a) First line: Delete "at".

This error has been corrected.

3b) Second paragraph: Change "LLCID" to "LCCID".

This error has been corrected.

3c) In the list of recommended projects, the cost for building B-18, alt 6 is lower than would be expected from the results of the EXCEL spreadsheet. Please check.

This error has been corrected.

pg 8 4) This comment is valid for other locations in the report as well. In the first paragraph, a 15-year payback requirement is mentioned for lighting projects. The ECIP Guidance specifies a 15-year economic life for lighting projects, but this should not be considered a payback requirement. The only payback criterion in the ECIP Guidance is the 10 year maximum.

All occurrences of this error have been corrected. Some buildings had alternates recommended with paybacks greater than 10 years, but less than 15 years. These projects have good payback and may be implemented using facility maintenance money, although they do not meet ECIP requirements. All buildings recommended for ECIP funding met the 10 year maximum payback.

pg 12 5) Change "SIR > 1" to "SIR < 1".

This error has been corrected.

pg 15 6) In the next-to-last paragraph, the term "are with" is used several times. Could the word "have" be substituted?

This suggestion has been incorporated.

pg 18 7) In the discussion of Alternate 5, change "one for once" to "one for one".

This error has been corrected.

pgs 21 & 22 8) In this part of the narrative turn-on/turn-off of lights and the use of occupancy sensors are discussed. Was any thought given to saving energy by revising switching arrangements? Would such a strategy be realistic in the operating environment? Please discuss.

This suggestion has been incorporated and is discussed in the detailed narrative. We have determined that the existing system has enough zone selectivity at the lighting panel. Adding switches would increase design and wiring costs, thereby increasing payback time. Furthermore, the production area is set up in a way that it is difficult to turn lights off at one location without affecting the surrounding areas.

pg 22 9) In the discussion on Light Output Calculations, change "there" to "the".

This error has been corrected.

pg 27 & App 2 10) Cost Data: Construction costs developed for each project, although not by any means final design costs, must contain an allowance for overhead and profit. These costs are carried forward into project documentation, which is really a request to Congress for funds to implement the project. We don't want the designer to find out, when the design is halfway done, that the job can't be done with the funds provided. I could never determine from the narrative or the Cost Estimates in Appendix 2 if allowances had been made for taxes, insurance, overhead, profit, etc. Please be sure these are included, and addressed in the narrative.

This suggestion has been incorporated and is explained in appendix 1. Supervision, overhead, and inspection costs are included in the SIOH percentage of 5.5%. Profit is built into the cost of the materials and labor. All cost estimates were reviewed and, if necessary, revised.

pg 28 11) The method used to account for the upgrade of the existing system in the LCCA (treating that cost as a non-energy savings in the first year) is ingenious. However, I did a lot of reading and checking through the report before I figured it out. This is covered in Appendix 1; but it would be a good idea to briefly discuss the approach in the narrative. Be sure to mention that the entire cost of the new fixtures (not the differential) is used as the construction cost, and that the upgrade is treated as mentioned above.

This suggestion has been incorporated and is discussed in appendix 1. Also, the detailed narrative contains a reference to using the baseline cost as a one-time savings for alternates 2 - 6.

pg 30 12) Change "Product Development Brochure" to "Project Development Brochure". Applies in other locations as well.

This suggestion has been incorporated.

Sec 4 13a) Move "Telephone Conversations", "Entry & Exit Interviews", and "Light Meter Calibration" to an appendix.

The "Telephone" and "Interviews" sections have been moved to the appendix. The "Light Meter Calibration" section remains in the "Miscellaneous Data" section.

13b) Change "Cost Estimates (LCCID)" to "Life Cycle Cost Analyses (LCCID)", and make a separate tab for this section.

This suggestion has been incorporated.

13c) Provide a separate tab for project documentation. Put 1391s & PDBs in this tab.

This suggestion has been incorporated.

Sec 4 14) Title sheet for <u>COST ESTIMATES</u>: Correct title as discussed in comment 13b. above.

This suggestion has been incorporated.

Sec 4 15) Life Cycle Cost Analysis Summary Sheets: The energy savings are expressed in MWh, which is logical for the study. However, the convention for expressing EEAP energy savings is in units of MMBTU. Suggest putting a table in the final report that will summarize all of the results and include a column for savings in MMBTU.

This suggestion has been incorporated. A table will be included at the end of the report summarizing results in both MWh and MMBTU.

DD Form 1391 16) It appears to me that the projects developed might have a better chance at implementation if they were treated as Operations & Maintenance projects, ie, repair of failed or failing systems. If so, a different type of documentation might be needed. This should be discussed with Milan and AMC at the review meeting.

This suggestion has been noted and is being considered. This consideration should not affect the nature of the energy study performed to date since FEMP has the same SIR and payback requirements as ECIP.

App 1 17a) Provide a separate tab for the appendix.

This suggestion has been incorporated.

17b) On the spreadsheet examples, the alternate number is about 2 spaces above the example, which makes it look as if it refers to the one above. Suggest moving them down to just above the example.

This suggestion has been incorporated. Alternate titles have been moved down to eliminate confusion.

17c) {23} Baseline Total, Existing Power: Change "in" to "is".

This error has been corrected.

17d) {25} Baseline Total, Total Power: In the equation, change "X" to "+".

This error has been corrected.

17e) {44} Comparison, Baseline Power (kWh): Change "multiply" to "multiplying".

This error has been corrected.

17f) {60}, {61}, {62}: Since the reflectances are poor, the question of improving them may arise. A brief note regarding the reasons for the existing colors may be in order.

This suggestion has been incorporated and is explained in appendix 1. The wall reflectances were lowered to account for imaginary walls in the analysis, which in reality have a reflectance of zero. The floors are painted red with an anti-static coating, and the ceilings are open A-frame type and painted black, which reduces the reflectance value of each.

17g) {62} Reflectance, % Floors: Change "values" to "value".

This error has been corrected.

17h) {63} Fixture Data, Coefficient of Utilization (CU): Insert "upon" at the end of the second line.

This error has been corrected.

17i) {65} Correct spelling of "lumens".

This error has been corrected.

17j) **Alternate 3**: Shouldn't this be "Alternate 2"? Please check and correct title and paragraph as needed.

This error has been corrected.

17k) {122}: An explanation of how the Excel spreadsheet data is used to create input for LCCID follows line {122}. It would be appropriate to insert a heading for "Life Cycle Cost Analysis Summary Sheets" at this point.

This suggestion has been incorporated.

17l) Part 1 - Investment: The recommended value for SIOH is 5.5%. Please correct throughout.

Cost estimates have been revised to include profit. SIOH is set to 5.5% for all LCCID calculations in the report.

17m) Refer to k. above. On the next page is a similar explanation for the LCCID calculations for the overall projects. Please provide an appropriate title to differentiate it from the preceding material.

This suggestion has been incorporated. A title has been added to separate this section.

App 1 18) At the end of Appendix 1 are two pages with tables titled "INTER.XLS". These seem to be out of place, and may not even be in all copies of the report. They were probably inserted to see if the reviewer was still awake.

These pages have been moved to the Miscellaneous Data section and an explanation of their use had been provided. The pages are used to find the coefficient of utilization for a specific fixture, given the room cavity ratio.

App 1 19) Following Appendix 1 are some handbook excerpts. These could be packaged as a separate appendix.

This suggestion has been incorporated.

App 5 20) Include a legend for the symbols used in the floor plans.

This suggestion has been incorporated. A legend has been added to the beginning of the Drawings Existing/Upgrade section.

Vol II 22) The grouping of the spreadsheet pages is confusing. If the spreadsheet for a particular building requires more than one page, the second page does not appear until several pages later. It took me quite a while to discover that "Building Total" was different from "Page Total" and might be on another page. Please rearrange as required.

The spreadsheet pages have been reordered to eliminate confusion.

RESPONSE TO REVIEW COMMENTS ON THE INTERIM SUBMITTAL FOR THE MILAN ARMY AMMUNITION PLANT FY93 LIMITED ENERGY STUDY

Response to comments from Ronald Dorsey

1. The study indicated that the demand charge shall be based upon a rate of $8.67 per kW. This figure is based upon present demand of the plant of 4,000 kW. This demand charge does not seem to reflect the rates indicated in the rate summary located in section 5 of volume 1. The summary indicates that the demand is $7.63 for the first 1,000 kW and $8.67 for any wattage above 1,000 KW. Study indicates that reduction in energy due to fixture changeout will not be below 1,000 kW. This is used as justification of the higher rate. This philosophy does not agree with the rate schedule.

None of the alternates evaluated will reduce energy demand below 1,000 kW. With this in mind, all energy cost savings should be calculated using the $8.67 rate. The first 1,000 kW demand, charged at $7.63, has no bearing on this study. This has been clarified in the detailed narrative.

2. The drawings included in the submittal should have a legend. This would help in identifying the new fixtures between the existing fixtures.

This suggestion has been incorporated. A legend has been added to the beginning of the Drawings Existing/Upgrade section.

3. The lighting calculations should include a column indicating the watts per square foot for the different areas. This would aid in determining if the fixture and lamp types used are the most efficient lighting in the area. This item is important in evaluating the energy requirements of the building in relation to function.

Many of the rooms studied included "imaginary" walls added for ease of analysis. Showing watts per square foot in these areas would give an incorrect value. Furthermore, watts per square foot by itself is a poor measure of a lamp's performance and showing that value could be misleading. Other factors such as lumen output, coefficient of utilization, color rendering, and total energy savings more accurately represent how efficient a fixture is.

4. The light loss factor for the fixtures should be checked. The numbers seem to be high for the type of fixtures and the cleanliness of the working environment.

The lighting systems recommended all have good lumen maintenance over rated life. Also, fixture lumens were specified using mean values rather than initial, so the LLF was increased accordingly. The reasons for using high light loss factors are explained under Light Output Calculations in the detailed narrative.

RESPONSE TO REVIEW COMMENTS ON THE INTERIM SUBMITTAL FOR THE MILAN ARMY AMMUNITION PLANT FY93 LIMITED ENERGY STUDY

Response to comments from David Tredrea

Need to insure:

1a) Over current protection devices are sized to protect the system against possible faults in the proposed lighting.

The system we recommend maintains existing circuit breaker loading. For this reason, current protection devices will not have to be adjusted.

1b) Existing transformers servicing the production facilities are sized to operate at optimum capacity since the proposed lighting will be more energy efficient.

During the field survey, AESE observed a number of equipment changeouts at the Milan facility. It is our opinion that the existing transformers should remain to accommodate these types of changeouts and future expansion that will increase building kW consumption.

1c) Existing transformers servicing the production facilities will have the proper K factor rating to compensate for harmonics that may or may not be added to the system by the proposed lighting.

It is the opinion of AESE that any increased harmonics produced at the service entrance will not affect the Milan facility and changing the k rating of the servicing transformers is not necessary.

2) The Energy Conservation Investment Program (ECIP) is a subset of the Military Construction, Army program. Although the documentation provided utilizes ECIP format, the work required may not be classified as construction type work. Section II, Detailed Narrative, paragraph 1 Problem Statement of the subject report states, "In all buildings it was common for the lighting systems to be in a state of disrepair". If this is in fact the case, the existing systems may be determined to be failed or failing, which would constitute maintenance and/or repair type work. It would be more advantageous for MAAP to pursue project funding via the Federal Energy Management Program.

This suggestion has been noted and is being considered. This consideration should not affect the nature of the energy study to date since FEMP has the same SIR and payback requirements as ECIP.

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	16	9-0	C	36	639	59	200	3.20	$411	$0	$227	I200	7	200	1.40	$4,961	I200	23	48	52	7,987	3,494	11,482	$5,599
	F312	2	9-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
2	I200	11	9-0	C				200	2.20	$283	$0	$156	I200	5	200	1.00	$3,544	I200	16	48	52	5,491	2,496	7,987	$3,982
	MV10	24	9-0	C	36	105	10	127	3.05	$1,295	$166	$247	MV10	10	127	1.27	$5,145	MV10	34	48	52	7,608	3,170	10,778	$6,852
	F212	2	9-0	C				82	0.16	$75	$7	$30	F212	0	82	0.00	$0	F212	2	48	52	409	0	409	$111
3	F212	1	9-0	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
4	I200	18	9-0	C				200	3.60	$462	$0	$255	I200	8	200	1.60	$5,670	I200	26	48	52	8,986	3,994	12,979	$6,387
	F212	4	9-0	C	49	185	17	82	0.33	$149	$14	$59	F212	0	82	0.00	$0	F212	4	48	52	819	0	819	$223
	MV10	7	9-0	C	38	108	10	127	0.89	$378	$48	$72	MV10	3	127	0.38	$1,543	MV10	10	48	52	2,219	951	3,170	$2,042
5	I200	5	9-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	F212	1	9-0	C	42	190	18	82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
6																									
7	I200	3	9-0	C	42	190	18	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F212	5	9-0	C				82	0.41	$187	$18	$74	F212	0	82	0.00	$0	F212	5	48	52	1,023	0	1,023	$279
8	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	1	9-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
9	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	3	9-0	C	36	260	24	132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
10	I200	2	9-0	C	36	75	7	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	2	9-0	C	36	173	16	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
11*	MV10	2	9-8	C				127	0.25	$108	$14	$21	MV10	1	127	0.13	$514	MV10	3	48	52	634	317	951	$657
	MV10	4	9-8	C	34	375	35	127	0.51	$216	$28	$41	MV10	2	127	0.25	$1,029	MV10	6	48	52	1,268	634	1,902	$1,314
	F212	1	9-8	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
12	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
RE	I200	2	9-0	R				200	0.40	$51	$0	$28	I200	0	200	0.00	$0	I200	2	48	52	998	0	998	$80
	MV10	14	9-0	R				127	1.78	$755	$97	$144	MV10	0	127	0.00	$0	MV10	14	48	52	4,438	0	4,438	$996
RW	I200	1	9-0	R				200	0.20	$26	$0	$14	I200	0	200	0.00	$0	I200	1	48	52	499	0	499	$40
	MV10	14	9-0	R				127	1.78	$755	$97	$144	MV10	0	127	0.00	$0	MV10	14	48	52	4,438	0	4,438	$996
RN	I200	1	9-0	R				200	0.20	$26	$0	$14	I200	0	200	0.00	$0	I200	1	48	52	499	0	499	$40
	MV10	6	9-0	R				127	0.76	$324	$41	$62	MV10	0	127	0.00	$0	MV10	6	48	52	1,902	0	1,902	$427
New Panel																	$1,500								$1,500
Building Total		160							24.76	$6,392	$567	$1,999		46		8.03	$30,993		206			61,793	20,048	81,841	$39,951

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	23	C	639	59	200	4.60	$5,599	MH70	16		89	1.42	$8,812	48	52	11,482	3,554	7,927	($3,213)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
2	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	MV10	34	C	105	10	127	4.32	$6,852	MH70	24		89	2.14	$13,218	48	52	10,778	5,331	5,446	($6,366)
	F212	2	C			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
3	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
4	I200	26	C			200	5.20	$6,387	MH70	18		89	1.60	$9,914	48	52	12,979	3,999	8,981	($3,527)
	F212	4	C	185	17	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
	MV10	10	C	108	10	127	1.27	$2,042	MH70	7		89	0.62	$3,855	48	52	3,170	1,555	1,615	($1,814)
5	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	F212	1	C	190	18	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
6																				
7	I200	5	C	190	18	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F212	5	C			82	0.41	$279	F208	5		62	0.31	$3,482	48	52	1,023	774	250	($3,203)
8	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
9	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	3	C	260	24	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
10	I200	3	C	75	7	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	3	C	173	16	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
11*	MV10	3	C			127	0.38	$657	MH70	2		89	0.18	$1,102	48	52	951	444	507	($445)
	MV10	6	C	375	35	127	0.76	$1,314	MH70	4		89	0.36	$2,203	48	52	1,902	889	1,013	($889)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
12	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
RE	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
	MV10	14	R			127	1.78	$996	MH70	14		89	1.25	$7,711	48	52	4,438	3,110	1,328	($6,715)
RW	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
	MV10	14	R			127	1.78	$996	MH70	14		89	1.25	$7,711	48	52	4,438	3,110	1,328	($6,715)
RN	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
	MV10	6	R			127	0.76	$427	MH70	6		89	0.53	$3,305	48	52	1,902	1,333	569	($2,878)
New Panel								$1,500												$1,500
Building Total		206					32.79	$39,951		160			13.70	$91,033			81,841	34,195	47,646	($51,082)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	23	C	639	59	200	4.60	$5,599	HP70	16		99	1.58	$9,871	48	52	11,482	3,954	7,528	($4,272)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
2	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	MV10	34	C	105	10	127	4.32	$6,852	HP70	24		99	2.38	$14,806	48	52	10,778	5,930	4,847	($7,954)
	F212	2	C			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
3	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
4	I200	26	C			200	5.20	$6,387	HP70	18		99	1.78	$11,105	48	52	12,979	4,448	8,531	($4,718)
	F212	4	C	185	17	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
	MV10	10	C	108	10	127	1.27	$2,042	HP70	7		99	0.69	$4,319	48	52	3,170	1,730	1,440	($2,277)
5	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	F212	1	C	190	18	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
6																				
7	I200	5	C	190	18	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F212	5	C			82	0.41	$279	F208	5		62	0.31	$3,482	48	52	1,023	774	250	($3,203)
8	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
9	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	3	C	260	24	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
10	I200	3	C	75	7	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	3	C	173	16	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
11*	MV10	3	C			127	0.38	$657	HP70	2		99	0.20	$1,234	48	52	951	494	457	($577)
	MV10	6	C	375	35	127	0.76	$1,314	HP70	4		99	0.40	$2,468	48	52	1,902	988	914	($1,154)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
12	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
RE	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
	MV10	14	R			127	1.78	$996	HP50	14		58	0.81	$8,446	48	52	4,438	2,027	2,411	($7,450)
RW	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
	MV10	14	R			127	1.78	$996	HP50	14		58	0.81	$8,446	48	52	4,438	2,027	2,411	($7,450)
RN	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
	MV10	6	R			127	0.76	$427	HP50	6		58	0.35	$3,620	48	52	1,902	869	1,033	($3,193)
New Panel								$1,500												$1,500
Building Total		206					32.79	$39,951		160			13.54	$99,780			81,841	33,801	48,041	($59,828)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	23	C	639	59	200	4.60	$5,599	MH70	16		89	1.42	$8,812	48	52	11,482	3,554	7,927	($3,213)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
2	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	MV10	34	C	105	10	127	4.32	$6,852	MH70	24		89	2.14	$13,218	48	52	10,778	5,331	5,446	($6,366)
	F212	2	C			82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
3	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
4	I200	26	C			200	5.20	$6,387	MH70	18		89	1.60	$9,914	48	52	12,979	3,999	8,981	($3,527)
	F212	4	C	185	17	82	0.33	$223	F212	0		82	0.33	$223	48	52	819	819	0	$0
	MV10	10	C	108	10	127	1.27	$2,042	MH70	7		89	0.62	$3,855	48	52	3,170	1,555	1,615	($1,814)
5	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	F212	1	C	190	18	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
6																				
7	I200	5	C	190	18	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F212	5	C			82	0.41	$279	F212	0		82	0.41	$279	48	52	1,023	1,023	0	$0
8	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
9	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	3	C	260	24	132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
10	I200	3	C	75	7	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	3	C	173	16	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
11*	MV10	3	C			127	0.38	$657	MH70	2		89	0.18	$1,102	48	52	951	444	507	($445)
	MV10	6	C	375	35	127	0.76	$1,314	MH70	4		89	0.36	$2,203	48	52	1,902	889	1,013	($889)
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
12	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
RE	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
	MV10	14	R			127	1.78	$996	MH70	14		89	1.25	$7,711	48	52	4,438	3,110	1,328	($6,715)
RW	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
	MV10	14	R			127	1.78	$996	MH70	14		89	1.25	$7,711	48	52	4,438	3,110	1,328	($6,715)
RN	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
	MV10	6	R			127	0.76	$427	MH70	6		89	0.53	$3,305	48	52	1,902	1,333	569	($2,878)
New Panel								$1,500												$1,500
Building Total		206					32.79	$39,951		140			14.40	$78,263			81,841	35,942	45,899	($38,311)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	23	C	639	59	200	4.60	$5,599	HP70	16		99	1.58	$9,871	48	52	11,482	3,954	7,528	($4,272)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
2	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	MV10	34	C	105	10	127	4.32	$6,852	HP70	24		99	2.38	$14,806	48	52	10,778	5,930	4,847	($7,954)
	F212	2	C			82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
3	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
4	I200	26	C			200	5.20	$6,387	HP70	18		99	1.78	$11,105	48	52	12,979	4,448	8,531	($4,718)
	F212	4	C	185	17	82	0.33	$223	F212	0		82	0.33	$223	48	52	819	819	0	$0
	MV10	10	C	108	10	127	1.27	$2,042	HP70	7		99	0.69	$4,319	48	52	3,170	1,730	1,440	($2,277)
5	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	F212	1	C	190	18	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
6																				
7	I200	5	C	190	18	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F212	5	C			82	0.41	$279	F212	0		82	0.41	$279	48	52	1,023	1,023	0	$0
8	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
9	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	3	C	260	24	132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
10	I200	3	C	75	7	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	3	C	173	16	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
11*	MV10	3	C			127	0.38	$657	HP70	2		99	0.20	$1,234	48	52	951	494	457	($577)
	MV10	6	C	375	35	127	0.76	$1,314	HP70	4		99	0.40	$2,468	48	52	1,902	988	914	($1,154)
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
12	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
RE	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
	MV10	14	R			127	1.78	$996	HP50	14		58	0.81	$8,446	48	52	4,438	2,027	2,411	($7,450)
RW	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
	MV10	14	R			127	1.78	$996	HP50	14		58	0.81	$8,446	48	52	4,438	2,027	2,411	($7,450)
RN	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
	MV10	6	R			127	0.76	$427	HP50	6		58	0.35	$3,620	48	52	1,902	869	1,033	($3,193)
New Panel								$1,500												$1,500
Building Total		206					32.79	$39,951		140			14.24	$87,009			81,841	35,548	46,293	($47,058)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	23	C	639	59	200	4.60	$5,599	HP50	16		58	0.93	$9,653	48	52	11,482	2,316	9,165	($4,054)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
2	I200	16	C			200	3.20	$3,982	HP50	11		58	0.64	$6,636	48	52	7,987	1,592	6,395	($2,654)
	MV10	34	C	105	10	127	4.32	$6,852	HP50	24		58	1.39	$14,479	48	52	10,778	3,474	7,303	($7,627)
	F212	2	C			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
3	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
4	I200	26	C			200	5.20	$6,387	HP50	18		58	1.04	$10,860	48	52	12,979	2,606	10,373	($4,472)
	F212	4	C	185	17	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
	MV10	10	C	108	10	127	1.27	$2,042	HP50	7		58	0.41	$4,223	48	52	3,170	1,013	2,157	($2,182)
5	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
	F212	1	C	190	18	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
6										0										
7	I200	5	C	190	18	200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F212	5	C			82	0.41	$279	F208	5		62	0.31	$3,482	48	52	1,023	774	250	($3,203)
8	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
9	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	3	C	260	24	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
10	I200	3	C	75	7	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	3	C	173	16	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
11*	MV10	3	C			127	0.38	$657	HP50	2		58	0.12	$1,207	48	52	951	290	661	($550)
	MV10	6	C	375	35	127	0.76	$1,314	HP50	4		58	0.23	$2,413	48	52	1,902	579	1,323	($1,100)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
12	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
RE	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
	MV10	14	R			127	1.78	$996	HP50	14		58	0.81	$8,446	48	52	4,438	2,027	2,411	($7,450)
RW	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
	MV10	14	R			127	1.78	$996	HP50	14		58	0.81	$8,446	48	52	4,438	2,027	2,411	($7,450)
RN	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
	MV10	6	R			127	0.76	$427	HP50	6		58	0.35	$3,620	48	52	1,902	869	1,033	($3,193)
New Panel								$1,500												$1,500
Building Total		206					32.79	$39,951		160			9.36	$98,390			81,841	23,363	58,479	($58,439)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	23	C	43	25	1075	3.80	30%	30%	20%	0.319	1	3400	78200	0.86	20.06
	F312	2	C	43	25	1075	3.80	30%	30%	20%						
2	I200	16	C	132	25	3300	2.85	30%	30%	20%	0.375	1	3400	54400	0.86	5.34
	MV10	34	C	132	25	3300	2.85	30%	30%	20%	0.375	1	2800	95200	0.81	8.71
	F212	2	C	132	25	3300	2.85	30%	30%	20%						
3	F212	1	C	11	8	88	12.95	30%	30%	20%						
4	I200	26	C	78	26	2028	3.08	30%	30%	20%	0.357	1	3400	88400	0.86	13.45
	F212	4	C	78	26	2028	3.08	30%	30%	20%						
	MV10	10	C	78	26	2028	3.08	30%	30%	20%	0.357	1	2800	28000	0.81	3.97
5	I200	7	C	34	12	408	6.76	30%	30%	20%	0.215	1	3400	23800	0.86	10.84
	F212	1	C	34	12	408	6.76	30%	30%	20%						
6																
7	I200	5	C	40	22	880	4.23	30%	30%	20%	0.298	1	3400	17000	0.86	4.98
	F212	5	C	40	22	880	4.23	30%	30%	20%						
8	I200	6	C	22	20	440	5.73	30%	30%	20%	0.244	1	3400	20400	0.86	9.78
	F312	1	C	22	20	440	5.73	30%	30%	20%						
9	I200	3	C	22	12	264	7.73	30%	30%	20%	0.190	1	3400	10200	0.86	6.35
	F312	3	C	22	12	264	7.73	30%	30%	20%						
10	I200	3	C	16	9	144	10.42	30%	30%	20%	0.130	1	3400	10200	0.86	7.96
	I200	3	C	16	9	144	10.42	30%	30%	20%	0.130	1	3400	10200	0.86	7.96
11*	MV10	3	C	24	17	408	6.03	30%	30%	20%	0.235	1	2800	8400	0.81	3.90
	MV10	6	C	24	17	408	6.03	30%	30%	20%	0.235	1	2800	16800	0.81	7.79
	F212	1	C	24	17	408	6.03	30%	30%	20%						
12	I200	3	C	17	8	136	11.03	30%	30%	20%	0.109	1	3400	10200	0.86	7.07
RE	I200	2	R	288	8	2304	3.21	30%	30%	20%	0.350	1	3400	6800	0.86	0.89
	MV10	14	R	288	8	2304	3.21	30%	30%	20%	0.350	1	2800	39200	0.81	4.79
RW	I200	1	R	288	8	2304	3.21	30%	30%	20%	0.350	1	3400	3400	0.86	0.45
	MV10	14	R	288	8	2304	3.21	30%	30%	20%	0.350	1	2800	39200	0.81	4.79
RN	I200	1	R	65	8	520	3.51	30%	30%	20%	0.334	1	3400	3400	0.86	1.89
	MV10	6	R	65	8	520	3.51	30%	30%	20%	0.334	1	2800	16800	0.81	8.69

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	16	C	43	25	1075	3.80	30%	30%	20%	0.276	1	4000	64000	0.90	14.82
	F208	2	C	43	25	1075	3.80	30%	30%	20%						
2	MH70	11	C	132	25	3300	2.85	30%	30%	20%	0.327	1	4000	44000	0.90	3.93
	MH70	24	C	132	25	3300	2.85	30%	30%	20%	0.327	1	4000	96000	0.90	8.58
	F208	2	C	132	25	3300	2.85	30%	30%	20%						
3	F208	1	C	11	8	88	12.95	30%	30%	20%						
4	MH70	18	C	78	26	2028	3.08	30%	30%	20%	0.313	1	4000	72000	0.90	10.02
	F208	4	C	78	26	2028	3.08	30%	30%	20%						
	MH70	7	C	78	26	2028	3.08	30%	30%	20%	0.313	1	4000	28000	0.90	3.90
5	MH70	5	C	34	12	408	6.76	30%	30%	20%	0.180	1	4000	20000	0.90	7.96
	F208	1	C	34	12	408	6.76	30%	30%	20%						
6																
7	MH70	3	C	40	22	880	4.23	30%	30%	20%	0.257	1	4000	12000	0.90	3.16
	F208	5	C	40	22	880	4.23	30%	30%	20%						
8	MH70	4	C	22	20	440	5.73	30%	30%	20%	0.207	1	4000	16000	0.90	6.79
	F208	1	C	22	20	440	5.73	30%	30%	20%						
9	MH70	2	C	22	12	264	7.73	30%	30%	20%	0.158	1	4000	8000	0.90	4.32
	F208	3	C	22	12	264	7.73	30%	30%	20%						
10	MH70	2	C	16	9	144	10.42	30%	30%	20%	0.106	1	4000	8000	0.90	5.31
	MH70	2	C	16	9	144	10.42	30%	30%	20%	0.106	1	4000	8000	0.90	5.31
11*	MH70	2	C	24	17	408	6.03	30%	30%	20%	0.198	1	4000	8000	0.90	3.50
	MH70	4	C	24	17	408	6.03	30%	30%	20%	0.198	1	4000	16000	0.90	7.00
	F208	1	C	24	17	408	6.03	30%	30%	20%						
12	MH70	2	C	17	8	136	11.03	30%	30%	20%	0.093	1	4000	8000	0.90	4.94
RE	MH70	2	R	288	8	2304	3.21	30%	30%	20%	0.306	1	4000	8000	0.90	0.96
	MH70	14	R	288	8	2304	3.21	30%	30%	20%	0.306	1	4000	56000	0.90	6.71
RW	MH70	1	R	288	8	2304	3.21	30%	30%	20%	0.306	1	4000	4000	0.90	0.48
	MH70	14	R	288	8	2304	3.21	30%	30%	20%	0.306	1	4000	56000	0.90	6.71
RN	MH70	1	R	65	8	520	3.51	30%	30%	20%	0.291	1	4000	4000	0.90	2.02
	MH70	6	R	65	8	520	3.51	30%	30%	20%	0.291	1	4000	24000	0.90	12.12

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	16	C	43	25	1075	3.80	30%	30%	20%	0.435	1	5450	87200	0.94	33.20
	F208	2	C	43	25	1075	3.80	30%	30%	20%						
2	HP70	11	C	132	25	3300	2.85	30%	30%	20%	0.511	1	5450	59950	0.94	8.73
	HP70	24	C	132	25	3300	2.85	30%	30%	20%	0.511	1	5450	130800	0.94	19.06
	F208	2	C	132	25	3300	2.85	30%	30%	20%						
3	F208	1	C	11	8	88	12.95	30%	30%	20%						
4	HP70	18	C	78	26	2028	3.08	30%	30%	20%	0.491	1	5450	98100	0.94	22.35
	F208	4	C	78	26	2028	3.08	30%	30%	20%						
	HP70	7	C	78	26	2028	3.08	30%	30%	20%	0.491	1	5450	38150	0.94	8.69
5	HP70	5	C	34	12	408	6.76	30%	30%	20%	0.282	1	5450	27250	0.94	17.72
	F208	1	C	34	12	408	6.76	30%	30%	20%						
6																
7	HP70	3	C	40	22	880	4.23	30%	30%	20%	0.405	1	5450	16350	0.94	7.08
	F208	5	C	40	22	880	4.23	30%	30%	20%						
8	HP70	4	C	22	20	440	5.73	30%	30%	20%	0.324	1	5450	21800	0.94	15.10
	F208	1	C	22	20	440	5.73	30%	30%	20%						
9	HP70	2	C	22	12	264	7.73	30%	30%	20%	0.246	1	5450	10900	0.94	9.56
	F208	3	C	22	12	264	7.73	30%	30%	20%						
10	HP70	2	C	16	9	144	10.42	30%	30%	20%	0.165	1	5450	10900	0.94	11.75
	HP70	2	C	16	9	144	10.42	30%	30%	20%	0.165	1	5450	10900	0.94	11.75
11*	HP70	2	C	24	17	408	6.03	30%	30%	20%	0.311	1	5450	10900	0.94	7.82
	HP70	4	C	24	17	408	6.03	30%	30%	20%	0.311	1	5450	21800	0.94	15.64
	F208	1	C	24	17	408	6.03	30%	30%	20%						
12	HP70	2	C	17	8	136	11.03	30%	30%	20%	0.145	1	5450	10900	0.94	10.93
RE	HP50	2	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	7200	0.94	1.41
	HP50	14	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	50400	0.94	9.90
RW	HP50	1	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	3600	0.94	0.71
	HP50	14	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	50400	0.94	9.90
RN	HP50	1	R	65	8	520	3.51	30%	30%	20%	0.457	1	3600	3600	0.94	2.98
	HP50	6	R	65	8	520	3.51	30%	30%	20%	0.457	1	3600	21600	0.94	17.86

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	16	C	43	25	1075	3.80	30%	30%	20%	0.276	1	4000	64000	0.90	14.82
	F312	2	C	43	25	1075	3.80	30%	30%	20%						
2	MH70	11	C	132	25	3300	2.85	30%	30%	20%	0.327	1	4000	44000	0.90	3.93
	MH70	24	C	132	25	3300	2.85	30%	30%	20%	0.327	1	4000	96000	0.90	8.58
	F212	2	C	132	25	3300	2.85	30%	30%	20%						
3	F212	1	C	11	8	88	12.95	30%	30%	20%						
4	MH70	18	C	78	26	2028	3.08	30%	30%	20%	0.313	1	4000	72000	0.90	10.02
	F212	4	C	78	26	2028	3.08	30%	30%	20%						
	MH70	7	C	78	26	2028	3.08	30%	30%	20%	0.313	1	4000	28000	0.90	3.90
5	MH70	5	C	34	12	408	6.76	30%	30%	20%	0.180	1	4000	20000	0.90	7.96
	F212	1	C	34	12	408	6.76	30%	30%	20%						
6																
7	MH70	3	C	40	22	880	4.23	30%	30%	20%	0.257	1	4000	12000	0.90	3.16
	F212	5	C	40	22	880	4.23	30%	30%	20%						
8	MH70	4	C	22	20	440	5.73	30%	30%	20%	0.207	1	4000	16000	0.90	6.79
	F312	1	C	22	20	440	5.73	30%	30%	20%						
9	MH70	2	C	22	12	264	7.73	30%	30%	20%	0.158	1	4000	8000	0.90	4.32
	F312	3	C	22	12	264	7.73	30%	30%	20%						
10	MH70	2	C	16	9	144	10.42	30%	30%	20%	0.106	1	4000	8000	0.90	5.31
	MH70	2	C	16	9	144	10.42	30%	30%	20%	0.106	1	4000	8000	0.90	5.31
11*	MH70	2	C	24	17	408	6.03	30%	30%	20%	0.198	1	4000	8000	0.90	3.50
	MH70	4	C	24	17	408	6.03	30%	30%	20%	0.198	1	4000	16000	0.90	7.00
	F212	1	C	24	17	408	6.03	30%	30%	20%						
12	MH70	2	C	17	8	136	11.03	30%	30%	20%	0.093	1	4000	8000	0.90	4.94
RE	MH70	2	R	288	8	2304	3.21	30%	30%	20%	0.306	1	4000	8000	0.90	0.96
	MH70	14	R	288	8	2304	3.21	30%	30%	20%	0.306	1	4000	56000	0.90	6.71
RW	MH70	1	R	288	8	2304	3.21	30%	30%	20%	0.306	1	4000	4000	0.90	0.48
	MH70	14	R	288	8	2304	3.21	30%	30%	20%	0.306	1	4000	56000	0.90	6.71
RN	MH70	1	R	65	8	520	3.51	30%	30%	20%	0.291	1	4000	4000	0.90	2.02
	MH70	6	R	65	8	520	3.51	30%	30%	20%	0.291	1	4000	24000	0.90	12.12

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	16	C	43	25	1075	3.80	30%	30%	20%	0.435	1	5450	87200	0.94	33.20
	F312	2	C	43	25	1075	3.80	30%	30%	20%						
2	HP70	11	C	132	25	3300	2.85	30%	30%	20%	0.511	1	5450	59950	0.94	8.73
	HP70	24	C	132	25	3300	2.85	30%	30%	20%	0.511	1	5450	130800	0.94	19.06
	F212	2	C	132	25	3300	2.85	30%	30%	20%						
3	F212	1	C	11	8	88	12.95	30%	30%	20%						
4	HP70	18	C	78	26	2028	3.08	30%	30%	20%	0.491	1	5450	98100	0.94	22.35
	F212	4	C	78	26	2028	3.08	30%	30%	20%						
	HP70	7	C	78	26	2028	3.08	30%	30%	20%	0.491	1	5450	38150	0.94	8.69
5	HP70	5	C	34	12	408	6.76	30%	30%	20%	0.282	1	5450	27250	0.94	17.72
	F212	1	C	34	12	408	6.76	30%	30%	20%						
6																
7	HP70	3	C	40	22	880	4.23	30%	30%	20%	0.405	1	5450	16350	0.94	7.08
	F212	5	C	40	22	880	4.23	30%	30%	20%						
8	HP70	4	C	22	20	440	5.73	30%	30%	20%	0.324	1	5450	21800	0.94	15.10
	F312	1	C	22	20	440	5.73	30%	30%	20%						
9	HP70	2	C	22	12	264	7.73	30%	30%	20%	0.246	1	5450	10900	0.94	9.56
	F312	3	C	22	12	264	7.73	30%	30%	20%						
10	HP70	2	C	16	9	144	10.42	30%	30%	20%	0.165	1	5450	10900	0.94	11.75
	HP70	2	C	16	9	144	10.42	30%	30%	20%	0.165	1	5450	10900	0.94	11.75
11*	HP70	2	C	24	17	408	6.03	30%	30%	20%	0.311	1	5450	10900	0.94	7.82
	HP70	4	C	24	17	408	6.03	30%	30%	20%	0.311	1	5450	21800	0.94	15.64
	F212	1	C	24	17	408	6.03	30%	30%	20%						
12	HP70	2	C	17	8	136	11.03	30%	30%	20%	0.145	1	5450	10900	0.94	10.93
RE	HP50	2	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	7200	0.94	1.41
	HP50	14	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	50400	0.94	9.90
RW	HP50	1	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	3600	0.94	0.71
	HP50	14	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	50400	0.94	9.90
RN	HP50	1	R	65	8	520	3.51	30%	30%	20%	0.457	1	3600	3600	0.94	2.98
	HP50	6	R	65	8	520	3.51	30%	30%	20%	0.457	1	3600	21600	0.94	17.86

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	16	C	43	25	1075	3.80	30%	30%	20%	0.435	1	3600	57600	0.94	21.93
	F208	2	C	43	25	1075	3.80	30%	30%	20%						
2	HP50	11	C	132	25	3300	2.85	30%	30%	20%	0.511	1	3600	39600	0.94	5.77
	HP50	24	C	132	25	3300	2.85	30%	30%	20%	0.511	1	3600	86400	0.94	12.59
	F208	2	C	132	25	3300	2.85	30%	30%	20%						
3	F208	1	C	11	8	88	12.95	30%	30%	20%						
4	HP50	18	C	78	26	2028	3.08	30%	30%	20%	0.491	1	3600	64800	0.94	14.76
	F208	4	C	78	26	2028	3.08	30%	30%	20%						
	HP50	7	C	78	26	2028	3.08	30%	30%	20%	0.491	1	3600	25200	0.94	5.74
5	HP50	5	C	34	12	408	6.76	30%	30%	20%	0.282	1	3600	18000	0.94	11.71
	F208	1	C	34	12	408	6.76	30%	30%	20%						
6																
7	HP50	3	C	40	22	880	4.23	30%	30%	20%	0.405	1	3600	10800	0.94	4.68
	F208	5	C	40	22	880	4.23	30%	30%	20%						
8	HP50	4	C	22	20	440	5.73	30%	30%	20%	0.324	1	3600	14400	0.94	9.98
	F208	1	C	22	20	440	5.73	30%	30%	20%						
9	HP50	2	C	22	12	264	7.73	30%	30%	20%	0.246	1	3600	7200	0.94	6.31
	F208	3	C	22	12	264	7.73	30%	30%	20%						
10	HP50	2	C	16	9	144	10.42	30%	30%	20%	0.165	1	3600	7200	0.94	7.76
	HP50	2	C	16	9	144	10.42	30%	30%	20%	0.165	1	3600	7200	0.94	7.76
11*	HP50	2	C	24	17	408	6.03	30%	30%	20%	0.311	1	3600	7200	0.94	5.16
	HP50	4	C	24	17	408	6.03	30%	30%	20%	0.311	1	3600	14400	0.94	10.33
	F208	1	C	24	17	408	6.03	30%	30%	20%						
12	HP50	2	C	17	8	136	11.03	30%	30%	20%	0.145	1	3600	7200	0.94	7.22
RE	HP50	2	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	7200	0.94	1.41
	HP50	14	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	50400	0.94	9.90
RW	HP50	1	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	3600	0.94	0.71
	HP50	14	R	288	8	2304	3.21	30%	30%	20%	0.481	1	3600	50400	0.94	9.90
RN	HP50	1	R	65	8	520	3.51	30%	30%	20%	0.457	1	3600	3600	0.94	2.98
	HP50	6	R	65	8	520	3.51	30%	30%	20%	0.457	1	3600	21600	0.94	17.86

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	23	C	2496	1	700	82.0	$818	0.0	$0	7.7	$121	$938
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
2	I200	16	C	2496	1	700	57.1	$569	0.0	$0	5.3	$84	$653
	MV10	34	C	2496	1	16800	5.1	$140	0.7	$94	11.3	$296	$531
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
3	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
4	I200	26	C	2496	1	700	92.7	$924	0.0	$0	8.7	$136	$1,061
	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44
	MV10	10	C	2496	1	16800	1.5	$41	0.2	$28	3.3	$87	$156
5	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
6													
7	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F212	5	C	2496	2	14000	0.9	$16	0.1	$7	1.7	$31	$55
8	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
9	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
10	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
11*	MV10	3	C	2496	1	16800	0.4	$12	0.1	$8	1.0	$26	$47
	MV10	6	C	2496	1	16800	0.9	$25	0.1	$17	2.0	$52	$94
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
12	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
RE	I200	2	R	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	MV10	14	R	2496	1	16800	2.1	$58	0.3	$39	4.7	$122	$219
RW	I200	1	R	2496	1	700	3.6	$36	0.0	$0	0.3	$5	$41
	MV10	14	R	2496	1	16800	2.1	$58	0.3	$39	4.7	$122	$219
RN	I200	1	R	2496	1	700	3.6	$36	0.0	$0	0.3	$5	$41
	MV10	6	R	2496	1	16800	0.9	$25	0.1	$17	2.0	$52	$94
Building Total		206						$3,952		$271		$1,403	$5,626

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	16	C	2496	1	5250	7.6	$493	0.3	$58	5.3	$140	$690	$248
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
2	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	MH70	24	C	2496	1	5250	11.4	$740	0.5	$86	8.0	$209	$1,036	($505)
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
3	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
4	MH70	18	C	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	$284
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	($146)
5	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
6														
7	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$3
8	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
9	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
10	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
11*	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($39)
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($79)
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
12	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
RE	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
	MH70	14	R	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	($386)
RW	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
	MH70	14	R	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	($386)
RN	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
	MH70	6	R	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	($165)
Building Total		160						$4,367		$537		$1,347	$6,250	($624)

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11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	16	C	2496	1	16800	2.4	$94	0.3	$60	5.3	$140	$293	$645
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
2	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	HP70	24	C	2496	1	16800	3.6	$141	0.5	$89	8.0	$209	$440	$91
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
3	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
4	HP70	18	C	2496	1	16800	2.7	$106	0.4	$67	6.0	$157	$330	$731
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$28
5	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
6														
7	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$3
8	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
9	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
10	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
11*	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$10
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$20
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
12	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
RE	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
	HP50	14	R	2496	1	16800	2.1	$90	0.3	$50	4.7	$122	$263	($44)
RW	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
	HP50	14	R	2496	1	16800	2.1	$90	0.3	$50	4.7	$122	$263	($44)
RN	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	($19)
Building Total		160						$896		$549		$1,347	$2,791	$2,835

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	16	C	2496	1	5250	7.6	$493	0.3	$58	5.3	$140	$690	$248
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
2	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	MH70	24	C	2496	1	5250	11.4	$740	0.5	$86	8.0	$209	$1,036	($505)
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
3	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
4	MH70	18	C	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	$284
	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44	$0
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	($146)
5	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
6														
7	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F212	5	C	2496	2	14000	0.9	$16	0.1	$7	1.7	$31	$55	$0
8	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
9	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
10	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
11*	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($39)
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($79)
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
12	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
RE	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
	MH70	14	R	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	($386)
RW	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
	MH70	14	R	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	($386)
RN	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
	MH70	6	R	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	($165)
Building Total		160						$4,390		$535		$1,347	$6,271	($645)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	16	C	2496	1	16800	2.4	$94	0.3	$60	5.3	$140	$293	$645
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
2	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	HP70	24	C	2496	1	16800	3.6	$141	0.5	$89	8.0	$209	$440	$91
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
3	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
4	HP70	18	C	2496	1	16800	2.7	$106	0.4	$67	6.0	$157	$330	$731
	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44	$0
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$28
5	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
6														
7	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F212	5	C	2496	2	14000	0.9	$16	0.1	$7	1.7	$31	$55	$0
8	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
9	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
10	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
11*	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$10
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$20
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
12	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
RE	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
	HP50	14	R	2496	1	16800	2.1	$90	0.3	$50	4.7	$122	$263	($44)
RW	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
	HP50	14	R	2496	1	16800	2.1	$90	0.3	$50	4.7	$122	$263	($44)
RN	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	($19)
Building Total		160						$919		$547		$1,347	$2,812	$2,814

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-2
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	16	C	2496	1	16800	2.4	$103	0.3	$58	5.3	$140	$300	$638
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
2	HP50	11	C	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$446
	HP50	24	C	2496	1	16800	3.6	$155	0.5	$86	8.0	$209	$451	$80
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
3	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
4	HP50	18	C	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$723
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$25
5	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
6														
7	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$3
8	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
9	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
10	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
11*	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$9
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$19
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
12	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
RE	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
	HP50	14	R	2496	1	16800	2.1	$90	0.3	$50	4.7	$122	$263	($44)
RW	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
	HP50	14	R											
RN	HP50	1	R											
	HP50	6	R											
Building Total		160						$818		$461		$1,163	$2,443	$2,831

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Existing Fixtures												Upgrade Fixtures					Baseline Total							
Room No.	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	2	8-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
2	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	2	7-0	C	32	215	20	132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
3	I200	6	8-0	C				200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
4	I200	2	8-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
4A	I200	2	8-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
4B	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
*	F312	1	8-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
5	I100	5	8-0	C				100	0.50	$115	$0	$71	I100	2	100	0.20	$1,417	I100	7	48	52	1,248	499	1,747	$1,603
	F312	8	8-0	C	38	315	29	132	1.06	$354	$36	$111	F312	0	132	0.00	$0	F312	8	48	52	2,636	0	2,636	$502
*	F312	5	8-0	C				132	0.66	$221	$23	$70	F312	0	132	0.00	$0	F312	5	48	52	1,647	0	1,647	$314
6	I200	5	8-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	F212	1	8-0	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
	F312	5	8-0	C				132	0.66	$221	$23	$70	F312	0	132	0.00	$0	F312	5	48	52	1,647	0	1,647	$314
7	I200	4	8-4	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
8	I200	3	8-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F212	1	8-4	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
	F312	7	8-0	C	42	415	39	132	0.92	$310	$32	$97	F312	0	132	0.00	$0	F312	7	48	52	2,306	0	2,306	$439
9	I200	5	8-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	F212	2	8-0	C				82	0.16	$75	$7	$30	F212	0	82	0.00	$0	F212	2	48	52	409	0	409	$111
	F312	6	8-0	C	42	445	41	132	0.79	$266	$27	$84	F312	0	132	0.00	$0	F312	6	48	52	1,977	0	1,977	$376
10	I200	4	8-0	C	30	112	10	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
11	F312	8	8-0	C	96	340	32	132	1.06	$354	$36	$111	F312	0	132	0.00	$0	F312	8	48	52	2,636	0	2,636	$502
12	I200	9	8-0	C				200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
13	I200	2	8-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	8	8-0	C	42	250	23	132	1.06	$354	$36	$111	F312	0	132	0.00	$0	F312	8	48	52	2,636	0	2,636	$502
14	F312	8	8-0	C				132	1.06	$354	$36	$111	F312	0	132	0.00	$0	F312	8	48	52	2,636	0	2,636	$502
15	I200	8	9-0	C	30	290	27	200	1.60	$206	$0	$113	I200	4	200	0.80	$2,835	I200	12	48	52	3,994	1,997	5,990	$3,154
16	I200	2	8-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	8	8-0	C	42	260	24	132	1.06	$354	$36	$111	F312	0	132	0.00	$0	F312	8	48	52	2,636	0	2,636	$502
17	F312	8	8-0	C				132	1.06	$354	$36	$111	F312	0	132	0.00	$0	F312	8	48	52	2,636	0	2,636	$502
	I200	3	8-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
New Panel																	$1,500								$1,500
Page Total		144							22.80	$5,109	$347	$2,025		33		6.40	$24,887		177			56,899	15,974	72,873	$32,368

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
18	I200	11	9-0	C	30	225	21	200	2.20	$283	$0	$156	I200	5	200	1.00	$3,544	I200	16	48	52	5,491	2,496	7,987	$3,982
	F312	1	8-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
19	I200	2	8-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F212	1	8-0	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
	F312	8	8-0	C	42	250	23	132	1.06	$354	$36	$111	F312	0	132	0.00	$0	F312	8	48	52	2,636	0	2,636	$502
R1	I200	18	8-0	R				200	3.60	$462	$0	$255	I200	0	200	0.00	$0	I200	18	48	52	8,986	0	8,986	$718
R2	I200	6	8-0	R				200	1.20	$154	$0	$85	I200	0	200	0.00	$0	I200	6	48	52	2,995	0	2,995	$239
	F312	1	8-0	R	34	720	67	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
R3	I200	17	8-0	R				200	3.40	$437	$0	$241	I200	0	200	0.00	$0	I200	17	48	52	8,486	0	8,486	$678
R4	I200	3	8-0	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
RC1	I200	4	8-0	R				200	0.80	$103	$0	$57	I200	0	200	0.00	$0	I200	4	48	52	1,997	0	1,997	$159
RC2	I200	3	8-0	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
RC3	MV10	8	8-0	R				127	1.02	$432	$55	$82	MV10	0	127	0.00	$0	MV10	8	48	52	2,536	0	2,536	$569
Page Total		83							15.22	$2,556	$104	$1,143		6		1.20	$4,252		89			37,984	2,995	40,979	$8,056
Building Tota		227							38.01	$7,665	$451	$3,169		39		7.60	$29,139		266			94,883	18,970	113,853	$40,424

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
2	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	2	C	215	20	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
3	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
4	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
4A	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
4B	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
*	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
5	I100	7	C			100	0.70	$1,603	MH70	5		89	0.45	$2,860	48	52	1,747	1,111	636	($1,257)
	F312	8	C	315	29	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
*	F312	5	C			132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
6	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,860	48	52	3,494	1,111	2,384	($1,243)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	F312	5	C			132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
7	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,288	48	52	2,995	889	2,107	($711)
8	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,716	48	52	2,496	666	1,830	($179)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	F312	7	C	415	39	132	0.92	$439	F208	7		62	0.43	$4,874	48	52	2,306	1,083	1,223	($4,435)
9	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,860	48	52	3,494	1,111	2,384	($1,243)
	F212	2	C			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
	F312	6	C	445	41	132	0.79	$376	F208	6		62	0.37	$4,178	48	52	1,977	929	1,048	($3,802)
10	I200	6	C	112	10	200	1.20	$1,577	MH70	4		89	0.36	$2,288	48	52	2,995	889	2,107	($711)
11	F312	8	C	340	32	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
12	I200	13	C			200	2.60	$3,194	MH70	9		89	0.80	$5,148	48	52	6,490	1,999	4,490	($1,955)
13	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	F312	8	C	250	23	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
14	F312	8	C			132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
15	I200	12	C	290	27	200	2.40	$3,154	MH70	8		89	0.71	$4,576	48	52	5,990	1,777	4,213	($1,422)
16	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	F312	8	C	260	24	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
17	F312	8	C			132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,716	48	52	2,496	666	1,830	($179)
New Panel								$1,500												$1,500
Page Total		177					29.20	$32,368		144			10.71	$91,750			72,873	26,732	46,141	($59,381)

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11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
18	I200	16	C	225	21	200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
19	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	F312	8	C	250	23	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
R1	I200	18	R			200	3.60	$718	MH70	18		89	1.60	$9,914	48	52	8,986	3,999	4,987	($9,196)
R2	I200	6	R			200	1.20	$239	MH70	6		89	0.53	$3,305	48	52	2,995	1,333	1,662	($3,065)
	F312	1	R	720	67	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
R3	I200	17	R			200	3.40	$678	MH70	17		89	1.51	$9,363	48	52	8,486	3,776	4,710	($8,685)
R4	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
RC1	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
RC2	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
RC3	MV10	8	R			127	1.02	$569	MH70	8		89	0.71	$4,406	48	52	2,536	1,777	759	($3,837)
Page Total		89					16.42	$8,056		83			7.09	$47,315			40,979	17,697	23,283	($39,259)
Building Total		266					45.61	$40,424		227			17.80	$139,064			113,853	44,429	69,424	($98,640)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
2	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	2	C	215	20	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
3	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
4	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
4A	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
4B	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
*	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
5	I100	7	C			100	0.70	$1,603	HP70	5		99	0.50	$3,085	48	52	1,747	1,236	512	($1,482)
	F312	8	C	315	29	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
*	F312	5	C			132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
6	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	F312	5	C			132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
7	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
8	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	F312	7	C	415	39	132	0.92	$439	F208	7		62	0.43	$4,874	48	52	2,306	1,083	1,223	($4,435)
9	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	F212	2	C			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
	F312	6	C	445	41	132	0.79	$376	F208	6		62	0.37	$4,178	48	52	1,977	929	1,048	($3,802)
10	I200	6	C	112	10	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
11	F312	8	C	340	32	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
12	I200	13	C			200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
13	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	8	C	250	23	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
14	F312	8	C			132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
15	I200	12	C	290	27	200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
16	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	8	C	260	24	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
17	F312	8	C			132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
New Panel								$1,500												$1,500
Page Total		177					29.20	$32,368		144			11.37	$95,033			72,873	28,380	44,494	($62,664)

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11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
18	I200	16	C	225	21	200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
19	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	F312	8	C	250	23	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
R1	I200	18	R			200	3.60	$718	HP50	18		58	1.04	$10,860	48	52	8,986	2,606	6,380	($10,142)
R2	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	869	2,127	($3,381)
	F312	1	R	720	67	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
R3	I200	17	R			200	3.40	$678	HP50	17		58	0.99	$10,256	48	52	8,486	2,461	6,025	($9,579)
R4	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
RC1	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
RC2	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
RC3	MV10	8	R			127	1.02	$569	HP50	8		58	0.46	$4,826	48	52	2,536	1,158	1,378	($4,257)
Page Total		89					16.42	$8,056		83			5.39	$51,275			40,979	13,456	27,523	($43,220)
Building Total		266					45.61	$40,424		227			16.76	$146,308			113,853	41,835	72,017	($105,884)

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11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
2	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	2	C	215	20	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
3	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
4	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
4A	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
4B	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
*	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
5	I100	7	C			100	0.70	$1,603	MH70	5		89	0.45	$2,754	48	52	1,747	1,111	636	($1,151)
	F312	8	C	315	29	132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
*	F312	5	C			132	0.66	$314	F312	0		132	0.66	$314	48	52	1,647	1,647	0	$0
6	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
	F312	5	C			132	0.66	$314	F312	0		132	0.66	$314	48	52	1,647	1,647	0	$0
7	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
8	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
	F312	7	C	415	39	132	0.92	$439	F312	0		132	0.92	$439	48	52	2,306	2,306	0	$0
9	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	F212	2	C			82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
	F312	6	C	445	41	132	0.79	$376	F312	0		132	0.79	$376	48	52	1,977	1,977	0	$0
10	I200	6	C	112	10	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
11	F312	8	C	340	32	132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
12	I200	13	C			200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
13	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	8	C	250	23	132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
14	F312	8	C			132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
15	I200	12	C	290	27	200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
16	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	8	C	260	24	132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
17	F312	8	C			132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
New Panel								$1,500												$1,500
Page Total		177					29.20	$32,368		66			15.97	$41,214			72,873	39,861	33,012	($8,846)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
18	I200	16	C	225	21	200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
19	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
	F312	8	C	250	23	132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
R1	I200	18	R			200	3.60	$718	MH70	18		89	1.60	$9,914	48	52	8,986	3,999	4,987	($9,196)
R2	I200	6	R			200	1.20	$239	MH70	6		89	0.53	$3,305	48	52	2,995	1,333	1,662	($3,065)
	F312	1	R	720	67	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
R3	I200	17	R			200	3.40	$678	MH70	17		89	1.51	$9,363	48	52	8,486	3,776	4,710	($8,685)
R4	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
RC1	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
RC2	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
RC3	MV10	8	R			127	1.02	$569	MH70	8		89	0.71	$4,406	48	52	2,536	1,777	759	($3,837)
Page Total		89					16.42	$8,056		72			7.81	$40,338			40,979	19,494	21,486	($32,282)
Building Total		266					45.61	$40,424		138			23.78	$81,552			113,853	59,355	54,498	($41,128)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
2	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	2	C	215	20	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
3	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
4	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
4A	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
4B	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
*	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
5	I100	7	C			100	0.70	$1,603	HP70	5		99	0.50	$3,085	48	52	1,747	1,236	512	($1,482)
	F312	8	C	315	29	132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
*	F312	5	C			132	0.66	$314	F312	0		132	0.66	$314	48	52	1,647	1,647	0	$0
6	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
	F312	5	C			132	0.66	$314	F312	0		132	0.66	$314	48	52	1,647	1,647	0	$0
7	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
8	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
	F312	7	C	415	39	132	0.92	$439	F312	0		132	0.92	$439	48	52	2,306	2,306	0	$0
9	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	F212	2	C			82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
	F312	6	C	445	41	132	0.79	$376	F312	0		132	0.79	$376	48	52	1,977	1,977	0	$0
10	I200	6	C	112	10	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
11	F312	8	C	340	32	132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
12	I200	13	C			200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
13	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	8	C	250	23	132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
14	F312	8	C			132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
15	I200	12	C	290	27	200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
16	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	8	C	260	24	132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
17	F312	8	C			132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
New Panel								$1,500												$1,500
Page Total		177					29.20	$32,368		66			16.63	$45,581			72,873	41,508	31,365	($13,213)

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11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
18	I200	16	C	225	21	200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	F312	1	C			132	0.13	$63	F312	1		132	0.13	$696	48	52	329	329	0	($634)
19	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F212	1	C			82	0.08	$56	F212	1		82	0.08	$738	48	52	205	205	0	($682)
	F312	8	C	250	23	132	1.06	$502	F312	8		132	1.06	$5,571	48	52	2,636	2,636	0	($5,069)
R1	I200	18	R			200	3.60	$718	HP50	18		58	1.04	$10,860	48	52	8,986	2,606	6,380	($10,142)
R2	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	869	2,127	($3,381)
	F312	1	R	720	67	132	0.13	$63	F312	1		132	0.13	$696	48	52	329	329	0	($634)
R3	I200	17	R			200	3.40	$678	HP50	17		58	0.99	$10,256	48	52	8,486	2,461	6,025	($9,579)
R4	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
RC1	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
RC2	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
RC3	MV10	8	R			127	1.02	$569	HP50	8		58	0.46	$4,826	48	52	2,536	1,158	1,378	($4,257)
Page Total		89					16.42	$8,056		83			6.11	$51,317			40,979	15,253	25,726	($43,261)
Building Tota		266					45.61	$40,424		149			22.74	$96,898			113,853	56,762	57,091	($56,474)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
2	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F312	2	C	215	20	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
3	I200	9	C			200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
4	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
4A	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
4B	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
*	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
5	I100	7	C			100	0.70	$1,603	HP50	5		58	0.29	$3,017	48	52	1,747	724	1,023	($1,413)
	F312	8	C	315	29	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
*	F312	5	C			132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
6	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	F312	5	C			132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
7	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
8	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	F312	7	C	415	39	132	0.92	$439	F208	7		62	0.43	$4,874	48	52	2,306	1,083	1,223	($4,435)
9	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
	F212	2	C			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
	F312	6	C	445	41	132	0.79	$376	F208	6		62	0.37	$4,178	48	52	1,977	929	1,048	($3,802)
10	I200	6	C	112	10	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
11	F312	8	C	340	32	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
12	I200	13	C			200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
13	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	8	C	250	23	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
14	F312	8	C			132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
15	I200	12	C	290	27	200	2.40	$3,154	HP50	8		58	0.46	$4,826	48	52	5,990	1,158	4,832	($1,673)
16	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	8	C	260	24	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
17	F312	8	C			132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
New Panel								$1,500												$1,500
Page Total		177					29.20	$32,368		144			8.66	$94,134			72,873	21,625	51,248	($61,765)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
18	I200	16	C	225	21	200	3.20	$3,982	HP50	11		58	0.64	$6,636	48	52	7,987	1,592	6,395	($2,654)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
19	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	F312	8	C	250	23	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
R1	I200	18	R			200	3.60	$718	HP50	18		58	1.04	$10,860	48	52	8,986	2,606	6,380	($10,142)
R2	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	869	2,127	($3,381)
	F312	1	R	720	67	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
R3	I200	17	R			200	3.40	$678	HP50	17		58	0.99	$10,256	48	52	8,486	2,461	6,025	($9,579)
R4	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
RC1	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
RC2	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
RC3	MV10	8	R			127	1.02	$569	HP50	8		58	0.46	$4,826	48	52	2,536	1,158	1,378	($4,257)
Page Total		89					16.42	$8,056		83			4.86	$51,098			40,979	12,126	28,854	($43,043)
Building Total		266					45.61	$40,424		227			13.52	$145,232			113,853	33,751	80,102	($104,808)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	3	C	28	19	532	5.30	30%	30%	20%	0.257	1	3400	10200	0.86	4.26
2	I200	5	C	28	19	532	5.30	30%	30%	20%	0.257	1	3400	17000	0.86	7.10
	F312	2	C	28	19	532	5.30	30%	30%	20%						
3	I200	9	C	30	19	570	5.16	30%	30%	20%	0.261	1	3400	30600	0.86	12.11
4	I200	3	C	19	13	247	7.77	30%	30%	20%	0.189	1	3400	10200	0.86	6.75
4A	I200	3	C	16	11	176	9.20	30%	30%	20%	0.109	1	3400	10200	0.86	5.46
4B	I200	2	C	16	8	128	11.25	30%	30%	20%	0.110	1	3400	6800	0.86	5.05
*	F312	1	C	16	8	128	11.25	30%	30%	20%						
5	I100	7	C	58	19	1102	4.19	30%	30%	20%	0.300	1	1340	9380	0.86	2.21
	F312	8	C	58	19	1102	4.19	30%	30%	20%						
*	F312	5	C	58	19	1102	4.19	30%	30%	20%						
6	I200	7	C	58	19	1102	4.19	30%	30%	20%	0.300	1	3400	23800	0.86	5.60
	F212	1	C	58	19	1102	4.19	30%	30%	20%						
	F312	5	C	58	19	1102	4.19	30%	30%	20%						
7	I200	6	C	58	19	1102	4.19	30%	30%	20%	0.300	1	3400	20400	0.86	4.80
8	I200	5	C	58	19	1102	4.19	30%	30%	20%	0.300	1	3400	17000	0.86	4.00
	F212	1	C	58	19	1102	4.19	30%	30%	20%						
	F312	7	C	58	19	1102	4.19	30%	30%	20%						
9	I200	7	C	58	19	1102	4.19	30%	30%	20%	0.300	1	3400	23800	0.86	5.60
	F212	2	C	58	19	1102	4.19	30%	30%	20%						
	F312	6	C	58	19	1102	4.19	30%	30%	20%						
10	I200	6	C	58	19	1102	4.19	30%	30%	20%	0.300	1	3400	20400	0.86	4.80
11	F312	8	C	58	19	1102	4.19	30%	30%	20%						
12	I200	13	C	58	19	1102	4.19	30%	30%	20%	0.300	1	3400	44200	0.86	10.40
13	I200	3	C	58	18	1044	4.37	30%	30%	20%	0.300	1	3400	10200	0.86	2.53
	F312	8	C	58	18	1044	4.37	30%	30%	20%						
14	F312	8	C	58	19	1102	4.19	30%	30%	20%						
15	I200	12	C	58	19	1102	4.19	30%	30%	20%	0.300	1	3400	40800	0.86	9.60
16	I200	3	C	58	19	1102	4.19	30%	30%	20%	0.300	1	3400	10200	0.86	2.40
	F312	8	C	58	19	1102	4.19	30%	30%	20%						
17	F312	8	C	58	18	1044	4.37	30%	30%	20%						
	I200	5	C	58	18	1044	4.37	30%	30%	20%	0.292	1	3400	17000	0.86	4.11

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
18	I200	16	C	58	19	1102	4.19	30%	30%	20%	0.300	1	3400	54400	0.86	12.80
	F312	1	C	58	19	1102	4.19	30%	30%	20%						
19	I200	3	C	58	19	1102	4.19	30%	30%	20%	0.300	1	3400	10200	0.86	2.40
	F212	1	C	58	19	1102	4.19	30%	30%	20%						
	F312	8	C	58	19	1102	4.19	30%	30%	20%						
R1	I200	18	R	320	8	2560	3.20	30%	30%	20%	0.350	1	3400	61200	0.86	7.23
R2	I200	6	R	60	8	480	3.54	30%	30%	20%	0.332	1	3400	20400	0.86	12.20
	F312	1	R	60	8	480	3.54	30%	30%	20%						
R3	I200	17	R	320	8	2560	3.20	30%	30%	20%	0.350	1	3400	57800	0.86	6.83
R4	I200	3	R	60	8	480	3.54	30%	30%	20%	0.332	1	3400	10200	0.86	6.10
RC1	I200	4	R	75	8	600	3.46	30%	30%	20%	0.337	1	3400	13600	0.86	6.60
RC2	I200	3	R	60	8	480	3.54	30%	30%	20%	0.332	1	3400	10200	0.86	6.10
RC3	MV10	8	R	130	8	1040	3.32	30%	30%	20%	0.344	1	2800	22400	0.81	5.97

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	2	C	28	19	532	5.30	30%	30%	20%	0.219	1	4000	8000	0.90	2.97
2	MH70	3	C	28	19	532	5.30	30%	30%	20%	0.219	1	4000	12000	0.90	4.46
	F208	2	C	28	19	532	5.30	30%	30%	20%						
3	MH70	6	C	30	19	570	5.16	30%	30%	20%	0.223	1	4000	24000	0.90	8.47
4	MH70	2	C	19	13	247	7.77	30%	30%	20%	0.157	1	4000	8000	0.90	4.59
4A	MH70	2	C	16	11	176	9.20	30%	30%	20%	0.132	1	4000	8000	0.90	5.41
4B	MH70	1	C	16	8	128	11.25	30%	30%	20%	0.089	1	4000	4000	0.90	2.51
*	F208	1	C	16	8	128	11.25	30%	30%	20%						
5	MH70	5	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	20000	0.90	4.24
	F208	8	C	58	19	1102	4.19	30%	30%	20%						
*	F208	5	C	58	19	1102	4.19	30%	30%	20%						
6	MH70	5	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	20000	0.90	4.24
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
	F208	5	C	58	19	1102	4.19	30%	30%	20%						
7	MH70	4	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	16000	0.90	3.39
8	MH70	3	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	12000	0.90	2.54
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
	F208	7	C	58	19	1102	4.19	30%	30%	20%						
9	MH70	5	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	20000	0.90	4.24
	F208	2	C	58	19	1102	4.19	30%	30%	20%						
	F208	6	C	58	19	1102	4.19	30%	30%	20%						
10	MH70	4	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	16000	0.90	3.39
11	F208	8	C	58	19	1102	4.19	30%	30%	20%						
12	MH70	9	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	36000	0.90	7.63
13	MH70	2	C	58	18	1044	4.37	30%	30%	20%	0.259	1	4000	8000	0.90	1.79
	F208	8	C	58	18	1044	4.37	30%	30%	20%						
14	F208	8	C	58	19	1102	4.19	30%	30%	20%						
15	MH70	8	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	32000	0.90	6.78
16	MH70	2	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	8000	0.90	1.70
	F208	8	C	58	19	1102	4.19	30%	30%	20%						
17	F208	8	C	58	18	1044	4.37	30%	30%	20%						
	MH70	3	C	58	18	1044	4.37	30%	30%	20%	0.252	1	4000	12000	0.90	2.61

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
18	MH70	11	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	44000	0.90	9.33
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
19	MH70	2	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	8000	0.90	1.70
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
	F208	8	C	58	19	1102	4.19	30%	30%	20%						
R1	MH70	18	R	320	8	2560	3.20	30%	30%	20%	0.307	1	4000	72000	0.90	7.79
R2	MH70	6	R	60	8	480	3.54	30%	30%	20%	0.289	1	4000	24000	0.90	13.04
	F208	1	R	60	8	480	3.54	30%	30%	20%						
R3	MH70	17	R	320	8	2560	3.20	30%	30%	20%	0.307	1	4000	68000	0.90	7.36
R4	MH70	3	R	60	8	480	3.54	30%	30%	20%	0.289	1	4000	12000	0.90	6.52
RC1	MH70	4	R	75	8	600	3.46	30%	30%	20%	0.294	1	4000	16000	0.90	7.07
RC2	MH70	3	R	60	8	480	3.54	30%	30%	20%	0.289	1	4000	12000	0.90	6.52
RC3	MH70	8	R	130	8	1040	3.32	30%	30%	20%	0.301	1	4000	32000	0.90	8.35

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	2	C	28	19	532	5.30	30%	30%	20%	0.344	1	5450	10900	0.94	6.63
2	HP70	3	C	28	19	532	5.30	30%	30%	20%	0.344	1	5450	16350	0.94	9.95
	F208	2	C	28	19	532	5.30	30%	30%	20%						
3	HP70	6	C	30	19	570	5.16	30%	30%	20%	0.350	1	5450	32700	0.94	18.89
4	HP70	2	C	19	13	247	7.77	30%	30%	20%	2.450	1	5450	10900	0.94	101.73
4A	HP70	2	C	16	11	176	9.20	30%	30%	20%	0.204	1	5450	10900	0.94	11.89
4B	HP70	1	C	16	8	128	11.25	30%	30%	20%	0.138	1	5450	5450	0.94	5.53
*	F208	1	C	16	8	128	11.25	30%	30%	20%						
5	HP70	5	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	27250	0.94	9.47
	F208	8	C	58	19	1102	4.19	30%	30%	20%						
*	F208	5	C	58	19	1102	4.19	30%	30%	20%						
6	HP70	5	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	27250	0.94	9.47
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
	F208	5	C	58	19	1102	4.19	30%	30%	20%						
7	HP70	4	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	21800	0.94	7.58
8	HP70	3	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	16350	0.94	5.68
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
	F208	7	C	58	19	1102	4.19	30%	30%	20%						
9	HP70	5	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	27250	0.94	9.47
	F208	2	C	58	19	1102	4.19	30%	30%	20%						
	F208	6	C	58	19	1102	4.19	30%	30%	20%						
10	HP70	4	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	21800	0.94	7.58
11	F208	8	C	58	19	1102	4.19	30%	30%	20%						
12	HP70	9	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	49050	0.94	17.04
13	HP70	2	C	58	18	1044	4.37	30%	30%	20%	0.396	1	5450	10900	0.94	3.89
	F208	8	C	58	18	1044	4.37	30%	30%	20%						
14	F208	8	C	58	19	1102	4.19	30%	30%	20%						
15	HP70	8	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	43600	0.94	15.15
16	HP70	2	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	10900	0.94	3.79
	F208	8	C	58	19	1102	4.19	30%	30%	20%						
17	F208	8	C	58	18	1044	4.37	30%	30%	20%						
	HP70	3	C	58	18	1044	4.37	30%	30%	20%	0.396	1	5450	16350	0.94	5.84

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
18	HP70	11	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	59950	0.94	20.83
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
19	HP70	2	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	10900	0.94	3.79
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
	F208	8	C	58	19	1102	4.19	30%	30%	20%						
R1	HP50	18	R	320	8	2560	3.20	30%	30%	20%	0.481	1	3600	64800	0.94	11.46
R2	HP50	6	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	21600	0.94	19.26
	F208	1	R	60	8	480	3.54	30%	30%	20%						
R3	HP50	17	R	320	8	2560	3.20	30%	30%	20%	0.481	1	3600	61200	0.94	10.82
R4	HP50	3	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	10800	0.94	9.63
RC1	HP50	4	R	75	8	600	3.46	30%	30%	20%	0.461	1	3600	14400	0.94	10.41
RC2	HP50	3	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	10800	0.94	9.63
RC3	HP50	8	R	130	8	1040	3.32	30%	30%	20%	0.472	1	3600	28800	0.94	12.30

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	2	C	28	19	532	5.30	30%	30%	20%	0.219	1	4000	8000	0.90	2.97
2	MH70	3	C	28	19	532	5.30	30%	30%	20%	0.219	1	4000	12000	0.90	4.46
	F312	2	C	28	19	532	5.30	30%	30%	20%						
3	MH70	6	C	30	19	570	5.16	30%	30%	20%	0.223	1	4000	24000	0.90	8.47
4	MH70	2	C	19	13	247	7.77	30%	30%	20%	0.157	1	4000	8000	0.90	4.59
4A	MH70	2	C	16	11	176	9.20	30%	30%	20%	0.132	1	4000	8000	0.90	5.41
4B	MH70	1	C	16	8	128	11.25	30%	30%	20%	0.089	1	4000	4000	0.90	2.51
*	F312	1	C	16	8	128	11.25	30%	30%	20%						
5	MH70	5	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	20000	0.90	4.24
	F312	8	C	58	19	1102	4.19	30%	30%	20%						
*	F312	5	C	58	19	1102	4.19	30%	30%	20%						
6	MH70	5	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	20000	0.90	4.24
	F212	1	C	58	19	1102	4.19	30%	30%	20%						
	F312	5	C	58	19	1102	4.19	30%	30%	20%						
7	MH70	4	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	16000	0.90	3.39
8	MH70	3	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	12000	0.90	2.54
	F212	1	C	58	19	1102	4.19	30%	30%	20%						
	F312	7	C	58	19	1102	4.19	30%	30%	20%						
9	MH70	5	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	20000	0.90	4.24
	F212	2	C	58	19	1102	4.19	30%	30%	20%						
	F312	6	C	58	19	1102	4.19	30%	30%	20%						
10	MH70	4	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	16000	0.90	3.39
11	F312	8	C	58	19	1102	4.19	30%	30%	20%						
12	MH70	9	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	36000	0.90	7.63
13	MH70	2	C	58	18	1044	4.37	30%	30%	20%	0.259	1	4000	8000	0.90	1.79
	F312	8	C	58	18	1044	4.37	30%	30%	20%						
14	F312	8	C	58	19	1102	4.19	30%	30%	20%						
15	MH70	8	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	32000	0.90	6.78
16	MH70	2	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	8000	0.90	1.70
	F312	8	C	58	19	1102	4.19	30%	30%	20%						
17	F312	8	C	58	18	1044	4.37	30%	30%	20%						
	MH70	3	C	58	18	1044	4.37	30%	30%	20%	0.252	1	4000	12000	0.90	2.61

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
18	MH70	11	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	44000	0.90	9.33
	F312	1	C	58	19	1102	4.19	30%	30%	20%						
19	MH70	2	C	58	19	1102	4.19	30%	30%	20%	0.259	1	4000	8000	0.90	1.70
	F212	1	C	58	19	1102	4.19	30%	30%	20%						
	F312	8	C	58	19	1102	4.19	30%	30%	20%						
R1	MH70	18	R	320	8	2560	3.20	30%	30%	20%	0.307	1	4000	72000	0.90	7.79
R2	MH70	6	R	60	8	480	3.54	30%	30%	20%	0.289	1	4000	24000	0.90	13.04
	F312	1	R	60	8	480	3.54	30%	30%	20%						
R3	MH70	17	R	320	8	2560	3.20	30%	30%	20%	0.307	1	4000	68000	0.90	7.36
R4	MH70	3	R	60	8	480	3.54	30%	30%	20%	0.289	1	4000	12000	0.90	6.52
RC1	MH70	4	R	75	8	600	3.46	30%	30%	20%	0.294	1	4000	16000	0.90	7.07
RC2	MH70	3	R	60	8	480	3.54	30%	30%	20%	0.289	1	4000	12000	0.90	6.52
RC3	MH70	8	R	130	8	1040	3.32	30%	30%	20%	0.301	1	4000	32000	0.90	8.35

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	2	C	28	19	532	5.30	30%	30%	20%	0.344	1	5450	10900	0.94	6.63
2	HP70	3	C	28	19	532	5.30	30%	30%	20%	0.344	1	5450	16350	0.94	9.95
	F312	2	C	28	19	532	5.30	30%	30%	20%						
3	HP70	6	C	30	19	570	5.16	30%	30%	20%	0.350	1	5450	32700	0.94	18.89
4	HP70	2	C	19	13	247	7.77	30%	30%	20%	2.450	1	5450	10900	0.94	101.73
4A	HP70	2	C	16	11	176	9.20	30%	30%	20%	0.204	1	5450	10900	0.94	11.89
4B	HP70	1	C	16	8	128	11.25	30%	30%	20%	0.138	1	5450	5450	0.94	5.53
*	F312	1	C	16	8	128	11.25	30%	30%	20%						
5	HP70	5	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	27250	0.94	9.47
	F312	8	C	58	19	1102	4.19	30%	30%	20%						
*	F312	5	C	58	19	1102	4.19	30%	30%	20%						
6	HP70	5	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	27250	0.94	9.47
	F212	1	C	58	19	1102	4.19	30%	30%	20%						
	F312	5	C	58	19	1102	4.19	30%	30%	20%						
7	HP70	4	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	21800	0.94	7.58
8	HP70	3	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	16350	0.94	5.68
	F212	1	C	58	19	1102	4.19	30%	30%	20%						
	F312	7	C	58	19	1102	4.19	30%	30%	20%						
9	HP70	5	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	27250	0.94	9.47
	F212	2	C	58	19	1102	4.19	30%	30%	20%						
	F312	6	C	58	19	1102	4.19	30%	30%	20%						
10	HP70	4	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	21800	0.94	7.58
11	F312	8	C	58	19	1102	4.19	30%	30%	20%						
12	HP70	9	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	49050	0.94	17.04
13	HP70	2	C	58	18	1044	4.37	30%	30%	20%	0.396	1	5450	10900	0.94	3.89
	F312	8	C	58	18	1044	4.37	30%	30%	20%						
14	F312	8	C	58	19	1102	4.19	30%	30%	20%						
15	HP70	8	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	43600	0.94	15.15
16	HP70	2	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	10900	0.94	3.79
	F312	8	C	58	19	1102	4.19	30%	30%	20%						
17	F312	8	C	58	18	1044	4.37	30%	30%	20%						
	HP70	3	C	58	18	1044	4.37	30%	30%	20%	0.396	1	5450	16350	0.94	5.84

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	L o c	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
18	HP70	11	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	59950	0.94	20.83
	F312	1	C	58	19	1102	4.19	30%	30%	20%						
19	HP70	2	C	58	19	1102	4.19	30%	30%	20%	0.407	1	5450	10900	0.94	3.79
	F212	1	C	58	19	1102	4.19	30%	30%	20%						
	F312	8	C	58	19	1102	4.19	30%	30%	20%						
R1	HP50	18	R	320	8	2560	3.20	30%	30%	20%	0.481	1	3600	64800	0.94	11.46
R2	HP50	6	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	21600	0.94	19.26
	F312	1	R	60	8	480	3.54	30%	30%	20%						
R3	HP50	17	R	320	8	2560	3.20	30%	30%	20%	0.481	1	3600	61200	0.94	10.82
R4	HP50	3	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	10800	0.94	9.63
RC1	HP50	4	R	75	8	600	3.46	30%	30%	20%	0.461	1	3600	14400	0.94	10.41
RC2	HP50	3	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	10800	0.94	9.63
RC3	HP50	8	R	130	8	1040	3.32	30%	30%	20%	0.472	1	3600	28800	0.94	12.30

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	2	C	28	19	532	5.30	30%	30%	20%	0.344	1	3600	7200	0.94	4.38
2	HP50	3	C	28	19	532	5.30	30%	30%	20%	0.344	1	3600	10800	0.94	6.57
	F208	2	C	28	19	532	5.30	30%	30%	20%						
3	HP50	6	C	30	19	570	5.16	30%	30%	20%	0.350	1	3600	21600	0.94	12.48
4	HP50	2	C	19	13	247	7.77	30%	30%	20%	2.450	1	3600	7200	0.94	67.20
4A	HP50	2	C	16	11	176	9.20	30%	30%	20%	0.204	1	3600	7200	0.94	7.85
4B	HP50	1	C	16	8	128	11.25	30%	30%	20%	0.138	1	3600	3600	0.94	3.65
*	F208	1	C	16	8	128	11.25	30%	30%	20%						
5	HP50	5	C	58	19	1102	4.19	30%	30%	20%	0.407	1	3600	18000	0.94	6.26
	F208	8	C	58	19	1102	4.19	30%	30%	20%						
*	F208	5	C	58	19	1102	4.19	30%	30%	20%						
6	HP50	5	C	58	19	1102	4.19	30%	30%	20%	0.407	1	3600	18000	0.94	6.26
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
	F208	5	C	58	19	1102	4.19	30%	30%	20%						
7	HP50	4	C	58	19	1102	4.19	30%	30%	20%	0.407	1	3600	14400	0.94	5.00
8	HP50	3	C	58	19	1102	4.19	30%	30%	20%	0.407	1	3600	10800	0.94	3.75
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
	F208	7	C	58	19	1102	4.19	30%	30%	20%						
9	HP50	5	C	58	19	1102	4.19	30%	30%	20%	0.407	1	3600	18000	0.94	6.26
	F208	2	C	58	19	1102	4.19	30%	30%	20%						
	F208	6	C	58	19	1102	4.19	30%	30%	20%						
10	HP50	4	C	58	19	1102	4.19	30%	30%	20%	0.407	1	3600	14400	0.94	5.00
11	F208	8	C	58	19	1102	4.19	30%	30%	20%						
12	HP50	9	C	58	19	1102	4.19	30%	30%	20%	0.407	1	3600	32400	0.94	11.26
13	HP50	2	C	58	18	1044	4.37	30%	30%	20%	0.396	1	3600	7200	0.94	2.57
	F208	8	C	58	18	1044	4.37	30%	30%	20%						
14	F208	8	C	58	19	1102	4.19	30%	30%	20%						
15	HP50	8	C	58	19	1102	4.19	30%	30%	20%	0.407	1	3600	28800	0.94	10.01
16	HP50	2	C	58	19	1102	4.19	30%	30%	20%	0.407	1	3600	7200	0.94	2.50
	F208	8	C	58	19	1102	4.19	30%	30%	20%						
17	F208	8	C	58	18	1044	4.37	30%	30%	20%						
	HP50	3	C	58	18	1044	4.37	30%	30%	20%	0.396	1	3600	10800	0.94	3.85

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
18	HP50	11	C	58	19	1102	4.19	30%	30%	20%	0.407	1	3600	39600	0.94	13.76
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
19	HP50	2	C	58	19	1102	4.19	30%	30%	20%	0.407	1	3600	7200	0.94	2.50
	F208	1	C	58	19	1102	4.19	30%	30%	20%						
	F208	8	C	58	19	1102	4.19	30%	30%	20%						
R1	HP50	18	R	320	8	2560	3.20	30%	30%	20%	0.481	1	3600	64800	0.94	11.46
R2	HP50	6	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	21600	0.94	19.26
	F208	1	R	60	8	480	3.54	30%	30%	20%						
R3	HP50	17	R	320	8	2560	3.20	30%	30%	20%	0.481	1	3600	61200	0.94	10.82
R4	HP50	3	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	10800	0.94	9.63
RC1	HP50	4	R	75	8	600	3.46	30%	30%	20%	0.461	1	3600	14400	0.94	10.41
RC2	HP50	3	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	10800	0.94	9.63
RC3	HP50	8	R	130	8	1040	3.32	30%	30%	20%	0.472	1	3600	28800	0.94	12.30

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
2	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
3	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
4	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
4A	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
4B	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
*	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
5	I100	7	C	2496	1	700	25.0	$181	0.0	$0	2.3	$37	$218
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101
*	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
6	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
7	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
8	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
	F312	7	C	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88
9	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
	F312	6	C	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76
10	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
11	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101
12	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
13	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101
14	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101
15	I200	12	C	2496	1	700	42.8	$427	0.0	$0	4.0	$63	$489
16	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101
17	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101
	I200	5	C										
Page Total		177						$3,623		$139		$983	$4,744

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
18	I200	16	C	2496	1	700	57.1	$569	0.0	$0	5.3	$84	$653
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
19	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101
R1	I200	18	R	2496	1	700	64.2	$640	0.0	$0	6.0	$94	$734
R2	I200	6	R	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	1	R	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
R3	I200	17	R	2496	1	700	60.6	$604	0.0	$0	5.7	$89	$693
R4	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
RC1	I200	4	R	2496	1	700	14.3	$142	0.0	$0	1.3	$21	$163
RC2	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
RC3	MV10	8	R	2496	1	16800	1.2	$33	0.2	$22	2.7	$70	$125
Page Total		89						$2,570		$42		$506	$3,117
Building Total		266						$6,193		$180		$1,489	$7,862

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
2	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
3	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
4	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
4A	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
4B	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
*	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$2
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
*	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
6	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
7	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
8	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	F208	7	C	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$15
9	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$13
10	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
11	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
12	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
13	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
14	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
15	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
16	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
17	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
	MH70	3	C											
Page Total		144						$2,138		$354		$1,040	$3,532	$1,212

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
18	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
19	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
R1	MH70	18	R	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	($43)
R2	MH70	6	R	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	($14)
	F208	1	R	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
R3	MH70	17	R	2496	1	5250	8.1	$524	0.3	$61	5.7	$148	$734	($40)
R4	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
RC1	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
RC2	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
RC3	MH70	8	R	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($220)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
2	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
3	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
4	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
4A	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
4B	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
*	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$126
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
*	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
6	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
7	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
8	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	F208	7	C	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$15
9	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$13
10	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
11	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
12	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
13	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
14	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
15	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
16	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
17	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	($55)
Page Total		144						$584		$373		$1,066	$2,023	$2,721

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
18	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
19	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
R1	HP50	18	R	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$396
R2	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
	F208	1	R	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
R3	HP50	17	R	2496	1	16800	2.5	$110	0.3	$61	5.7	$148	$319	$374
R4	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RC1	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
RC2	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RC3	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	($25)
Page Total		83						$485		$279		$697	$1,461	$1,657
Building Total		227						$1,069		$652		$1,763	$3,484	$4,378

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
2	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
3	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
4	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
4A	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
4B	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
*	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
5	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$2
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
*	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$0
6	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$0
7	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
8	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
	F312	7	C	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$0
9	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
	F312	6	C	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$0
10	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
11	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
12	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
13	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
14	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
15	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
16	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
17	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($129)
Page Total		144						$2,384		$377		$1,066	$3,826	$918

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
18	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
19	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
R1	MH70	18	R	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	($43)
R2	MH70	6	R	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	($14)
	F312	1	R	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
R3	MH70	17	R	2496	1	5250	8.1	$524	0.3	$61	5.7	$148	$734	($40)
R4	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
RC1	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
RC2	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
RC3	MH70	8	R	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($220)
Page Total		83						$2,269		$279		$697	$3,244	($127)
Building Total		227						$4,652		$655		$1,763	$7,070	$792

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
2	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
3	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
4	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
4A	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
4B	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
*	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
5	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$126
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
*	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$0
6	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$0
7	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
8	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
	F312	7	C	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$0
9	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
	F312	6	C	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$0
10	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
11	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
12	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
13	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
14	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
15	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
16	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
17	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	($55)
Page Total		144						$737		$384		$1,066	$2,187	$2,557

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
18	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
19	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
R1	HP50	18	R	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$396
R2	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
	F312	1	R	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
R3	HP50	17	R	2496	1	16800	2.5	$110	0.3	$61	5.7	$148	$319	$374
R4	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RC1	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
RC2	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RC3	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	($25)
Page Total		83						$506		$280		$697	$1,483	$1,634
Building Total		144						$1,243		$665		$1,763	$3,670	$4,191

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
2	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
3	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
4	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
4A	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
4B	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
*	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$124
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
*	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
6	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
7	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
8	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	F208	7	C	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$15
9	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$13
10	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
11	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
12	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
13	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
14	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
15	HP50	8	C	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$339
16	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
17	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	($56)
Page Total		144						$622		$365		$1,066	$2,053	$2,692

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
18	HP50	11	C	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$446
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
19	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
R1	HP50	18	R	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$396
R2	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
	F208	1	R	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
R3	HP50	17	R	2496	1	16800	2.5	$110	0.3	$61	5.7	$148	$319	$374
R4	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RC1	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
RC2	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RC3	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	($25)
Page Total		83						$492		$277		$697	$1,466	$1,651
Building Total		227						$1,114		$642		$1,763	$3,519	$4,343

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	6	8-0	C	36	130	12	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
2	I200	4	7-0	C	32	195	18	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	3	8-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
3	I200	2	9-0	C	36	420	39	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
4	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	1	8-0	C	31	195	18	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
5	I200	4	9-0	C	36	180	17	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
6	I200	4	9-0	C	36	195	18	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
7	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	I200	3	8-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	1	8-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
8	I200	6	9-0	C	33	300	28	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
9	I200	6	9-0	C				200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
10	I200	3	9-0	C	33	385	36	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
11	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
12	I200	5	9-0	C	84	175	16	200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
13	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
14	I200	2	10-0	C	32	120	11	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	2	12-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
15	I200	5	12-0	C	36	120	11	200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	3	10-0	C	36	120	11	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
16	I200	5	8-0	C	36	350	33	200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	I200	6	8-0	C	42	98	9	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
	I200	3	8-0	C	36	30	3	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	2	8-0	C	36	350	33	132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
*	F312	2	8-0	C	36	330	31	132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
*	F312	1	8-0	C	36	30	3	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
17	MH10	8	20-0	C				119	0.95	$752	$74	$92	MH10	4	119	0.48	$2,288	MH10	12	48	52	2,376	1,188	3,564	$3,206
	MH10	8	16-0	C				119	0.95	$752	$74	$92	MH10	4	119	0.48	$2,288	MH10	12	48	52	2,376	1,188	3,564	$3,206
	MH10	8	14-0	C				119	0.95	$752	$74	$92	MH10	4	119	0.48	$2,288	MH10	12	48	52	2,376	1,188	3,564	$3,206
18	MV10	8	10-0	L				127	1.02	$432	$74	$92	MV10	0	127	0.00	$0	MV10	8	48	52	2,536	0	2,536	$597
19	MV10	8	16-0	C				127	1.02	$432	$74	$92	MV10	4	127	0.51	$2,288	MV10	12	48	52	2,536	1,268	3,804	$2,885
	MV10	8	14-0	C				127	1.02	$432	$74	$92	MV10	4	127	0.51	$2,288	MV10	12	48	52	2,536	1,268	3,804	$2,885
New Panel																	$1,500								$1,500
Page Total		141							24.03	$6,072	$476	$1,866		65		11.44	$44,832		206			59,974	28,564	88,538	$53,245

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11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
20	I200	8	16-0	C				200	1.60	$206	$0	$113	I200	4	200	0.80	$2,835	I200	12	48	52	3,994	1,997	5,990	$3,154
*	I200	5	16-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
*	F312	2	14-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	F312	1	14-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
21	I200	10	12-0	C	36	120	11	200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
22	I200	4	14-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
23	I200	3	12-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
24	I200	4	12-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
25	I200	4	12-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
26	I200	1	12-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
27	I200	4	12-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
28	I200	4	12-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
29	I200	3	10-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
30	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	2	9-0	C	36	475	44	132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
31 *	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
*	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
32	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	1	12-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F312	1	9-0	C	36	720	67	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
33	I200	2	12-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
34	I200	12	8-0	C				200	2.40	$308	$0	$170	I200	5	200	1.00	$3,544	I200	17	48	52	5,990	2,496	8,486	$4,022
	F312	1	8-0	C	36	450	42	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
35	I200	3	12-0	C	36	315	29	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
36	I200	2	12-0	C	36	120	11	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
37	I200	2	8-0	C	36	255	24	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	1	12-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
38	I200	14	10-0	R				200	2.80	$360	$0	$198	I200	0	200	0.00	$0	I200	14	48	52	6,989	0	6,989	$558
RE	I200	6	14-0	R				200	1.20	$154	$0	$85	I200	0	200	0.00	$0	I200	6	48	52	2,995	0	2,995	$239
RN	I200	3	10-0	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
	I200	3	10-0	L				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
RC	I200	15	10-0	R				200	3.00	$385	$0	$213	I200	0	200	0.00	$0	I200	15	48	52	7,488	0	7,488	$598
Page Total		130							25.52	$3,470	$32	$1,841		43		8.60	$30,474		173			63,708	21,466	85,174	$35,816
Building Tot		271							49.55	$9,542	$507	$3,706		108		20.04	$75,306		379			123,682	50,030	173,712	$89,061

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	9	C	130	12	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
2	I200	6	C	195	18	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
3	I200	3	C	420	39	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
4	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	1	C	195	18	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
5	I200	6	C	180	17	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
6	I200	6	C	195	18	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
7	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
8	I200	9	C	300	28	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
9	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
10	I200	5	C	385	36	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
11	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
12	I200	7	C	175	16	200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
13	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
14	I200	3	C	120	11	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
15	I200	7	C	120	11	200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	C	120	11	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
16	I200	7	C	350	33	200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	I200	9	C	98	9	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
	I200	5	C	30	3	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	2	C	350	33	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
*	F312	2	C	330	31	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
*	F312	1	C	30	3	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
17	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	0	3,564	$0
	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	0	3,564	$0
	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	0	3,564	$0
18	MV10	8	L			127	1.02	$597	MH70	8		89	0.71	$4,406	48	52	2,536	1,777	759	($3,809)
19	MV10	12	C			127	1.52	$2,885	MH70	8		89	0.71	$4,406	48	52	3,804	1,777	2,027	($1,521)
	MV10	12	C			127	1.52	$2,885	MH70	8		89	0.71	$4,406	48	52	3,804	1,777	2,027	($1,521)
New Panel								$1,500												$1,500
Page Total		206					35.47	$53,245		117			14.51	$75,076			88,538	25,519	63,019	($21,831)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
20	I200	12	C			200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
*	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
*	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
21	I200	14	C	120	11	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
22	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
23	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
24	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
25	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
26	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
27	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
28	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
29	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
30	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	F312	2	C	475	44	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
31 *	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,716	48	52	2,496	666	1,830	($179)
*	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
32	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
	F312	1	C	720	67	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
33	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
34	I200	17	C			200	3.40	$4,022	MH70	12		89	1.07	$6,864	48	52	8,486	2,666	5,821	($2,842)
	F312	1	C	450	42	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
35	I200	5	C	315	29	200	1.00	$1,537	MH70	3		89	0.27	$1,716	48	52	2,496	666	1,830	($179)
36	I200	3	C	120	11	200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
37	I200	3	C	255	24	200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
38	I200	14	R			200	2.80	$558	MH70	14		89	1.25	$8,008	48	52	6,989	3,110	3,879	($7,450)
RE	I200	6	R			200	1.20	$239	MH70	6		89	0.53	$3,432	48	52	2,995	1,333	1,662	($3,193)
RN	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,716	48	52	1,498	666	831	($1,596)
	I200	3	L			200	0.60	$120	MH70	3		89	0.27	$1,716	48	52	1,498	666	831	($1,596)
RC	I200	15	R			200	3.00	$598	MH70	15		89	1.34	$8,580	48	52	7,488	3,332	4,156	($7,982)
Page Total		173					34.12	$35,816		130			11.38	$74,170			85,174	28,407	56,767	($38,354)
Building Tot		379					69.60	$89,061		247			25.89	$149,246			173,712	53,926	119,786	($60,185)

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11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	9	C	130	12	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
2	I200	6	C	195	18	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
3	I200	3	C	420	39	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
4	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	1	C	195	18	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
5	I200	6	C	180	17	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
6	I200	6	C	195	18	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
7	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
8	I200	9	C	300	28	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
9	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
10	I200	5	C	385	36	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
11	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
12	I200	7	C	175	16	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
13	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
14	I200	3	C	120	11	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
15	I200	7	C	120	11	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	C	120	11	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
16	I200	7	C	350	33	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	I200	9	C	98	9	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
	I200	5	C	30	3	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	2	C	350	33	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
*	F312	2	C	330	31	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
*	F312	1	C	30	3	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
17	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	0	3,564	$0
	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	0	3,564	$0
	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	0	3,564	$0
18	MV10	8	L			127	1.02	$597	HP70	8		99	0.79	$4,935	48	52	2,536	1,977	559	($4,338)
19	MV10	12	C			127	1.52	$2,885	HP70	8		99	0.79	$4,935	48	52	3,804	1,977	1,827	($2,050)
	MV10	12	C			127	1.52	$2,885	HP70	8		99	0.79	$4,935	48	52	3,804	1,977	1,827	($2,050)
New Panel								$1,500												$1,500
Page Total		206					35.47	$53,245		117			15.61	$82,355			88,538	28,265	60,273	($29,110)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
20	I200	12	C			200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
*	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
*	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
21	I200	14	C	120	11	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
22	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
23	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
24	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
25	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
26	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
27	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
28	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
29	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
30	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C	475	44	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
31 *	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
*	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
32	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F312	1	C	720	67	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
33	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
34	I200	17	C			200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,965	5,521	($3,381)
	F312	1	C	450	42	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
35	I200	5	C	315	29	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
36	I200	3	C	120	11	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
37	I200	3	C	255	24	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
38	I200	14	R			200	2.80	$558	HP50	9		58	0.52	$5,430	48	52	6,989	1,303	5,686	($4,872)
RE	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	869	2,127	($3,381)
RN	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
	I200	3	L			200	0.60	$120	HP70	3		99	0.30	$1,851	48	52	1,498	741	756	($1,731)
RC	I200	15	R			200	3.00	$598	HP50	10		58	0.58	$6,033	48	52	7,488	1,448	6,040	($5,435)
Page Total		173					34.12	$35,816		120			10.47	$74,206			85,174	26,141	59,033	($38,390)
Building Tot		379					69.60	$89,061		237			26.08	$156,561			173,712	54,405	119,306	($67,500)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	9	C	130	12	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
2	I200	6	C	195	18	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
3	I200	3	C	420	39	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
4	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	1	C	195	18	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
5	I200	6	C	180	17	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
6	I200	6	C	195	18	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
7	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
8	I200	9	C	300	28	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
9	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
10	I200	5	C	385	36	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
11	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
12	I200	7	C	175	16	200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
13	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
14	I200	3	C	120	11	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
15	I200	7	C	120	11	200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	C	120	11	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
16	I200	7	C	350	33	200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	I200	9	C	98	9	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
	I200	5	C	30	3	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	2	C	350	33	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
*	F312	2	C	330	31	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
*	F312	1	C	30	3	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
17	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	3,564	0	$0
	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	3,564	0	$0
	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	3,564	0	$0
18	MV10	8	L			127	1.02	$597	MH70	8		89	0.71	$4,406	48	52	2,536	1,777	759	($3,809)
19	MV10	12	C			127	1.52	$2,885	MH70	8		89	0.71	$4,406	48	52	3,804	1,777	2,027	($1,521)
	MV10	12	C			127	1.52	$2,885	MH70	8		89	0.71	$4,406	48	52	3,804	1,777	2,027	($1,521)
New Panel								$1,500												$1,500
Page Total		206					35.47	$53,245		110			15.00	$70,641			88,538	37,435	51,103	($17,396)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
20	I200	12	C			200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
*	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
*	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
21	I200	14	C	120	11	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
22	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
23	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
24	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
25	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
26	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
27	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
28	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
29	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
30	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	2	C	475	44	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
31 *	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
*	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
32	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	F312	1	C	720	67	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
33	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
34	I200	17	C			200	3.40	$4,022	MH70	12		89	1.07	$6,609	48	52	8,486	2,666	5,821	($2,587)
	F312	1	C	450	42	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
35	I200	5	C	315	29	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
36	I200	3	C	120	11	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
37	I200	3	C	255	24	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
38	I200	14	R			200	2.80	$558	MH70	14		89	1.25	$7,711	48	52	6,989	3,110	3,879	($7,153)
RE	I200	6	R			200	1.20	$239	MH70	6		89	0.53	$3,305	48	52	2,995	1,333	1,662	($3,065)
RN	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
	I200	3	L			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
RC	I200	15	R			200	3.00	$598	MH70	15		89	1.34	$8,261	48	52	7,488	3,332	4,156	($7,663)
Page Total		173					34.12	$35,816		123			11.87	$68,182			85,174	29,630	55,543	($32,366)
Building Tot		379					69.60	$89,061		233			26.87	$138,823			173,712	67,065	106,647	($49,762)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	9	C	130	12	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
2	I200	6	C	195	18	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
3	I200	3	C	420	39	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
4	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	1	C	195	18	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
5	I200	6	C	180	17	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
6	I200	6	C	195	18	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
7	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
8	I200	9	C	300	28	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
9	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
10	I200	5	C	385	36	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
11	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
12	I200	7	C	175	16	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
13	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
14	I200	3	C	120	11	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
15	I200	7	C	120	11	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	C	120	11	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
16	I200	7	C	350	33	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	I200	9	C	98	9	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
	I200	5	C	30	3	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	2	C	350	33	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
*	F312	2	C	330	31	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
*	F312	1	C	30	3	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
17	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	3,564	0	$0
	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	3,564	0	$0
	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	3,564	0	$0
18	MV10	8	L			127	1.02	$597	HP70	8		99	0.79	$4,935	48	52	2,536	1,977	559	($4,338)
19	MV10	12	C			127	1.52	$2,885	HP70	8		99	0.79	$4,935	48	52	3,804	1,977	1,827	($2,050)
	MV10	12	C			127	1.52	$2,885	HP70	8		99	0.79	$4,935	48	52	3,804	1,977	1,827	($2,050)
New Panel								$1,500												$1,500
Page Total		206					35.47	$53,245		110			16.10	$77,920			88,538	40,181	48,358	($24,675)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
20	I200	12	C			200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
*	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
*	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
21	I200	14	C	120	11	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
22	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
23	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
24	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
25	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
26	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
27	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
28	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
29	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
30	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C	475	44	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
31 *	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
*	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
32	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F312	1	C	720	67	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
33	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
34	I200	17	C			200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,965	5,521	($3,381)
	F312	1	C	450	42	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
35	I200	5	C	315	29	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
36	I200	3	C	120	11	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
37	I200	3	C	255	24	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
38	I200	14	R			200	2.80	$558	HP50	14		58	0.81	$8,446	48	52	6,989	2,027	4,962	($7,888)
RE	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	869	2,127	($3,381)
RN	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
	I200	3	L			200	0.60	$120	HP70	3		99	0.30	$1,851	48	52	1,498	741	756	($1,731)
RC	I200	15	R			200	3.00	$598	HP50	15		58	0.87	$9,050	48	52	7,488	2,172	5,316	($8,452)
Page Total		173					34.12	$35,816		123			11.54	$75,804			85,174	28,811	56,362	($39,987)
Building Tot		379					69.60	$89,061		233			27.64	$153,723			173,712	68,992	104,720	($64,662)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	9	C	130	12	200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
2	I200	6	C	195	18	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
3	I200	3	C	420	39	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
4	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F312	1	C	195	18	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
5	I200	6	C	180	17	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
6	I200	6	C	195	18	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
7	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
8	I200	9	C	300	28	200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
9	I200	9	C			200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
10	I200	5	C	385	36	200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
11	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
12	I200	7	C	175	16	200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
13	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
14	I200	3	C	120	11	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
15	I200	7	C	120	11	200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	5	C	120	11	200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
16	I200	7	C	350	33	200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
	I200	9	C	98	9	200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
	I200	5	C	30	3	200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F312	2	C	350	33	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
*	F312	2	C	330	31	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
*	F312	1	C	30	3	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
17	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	0	3,564	$0
	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	0	3,564	$0
	MH10	12	C			119	1.43	$3,206	MH10	0		119	1.43	$3,206	48	52	3,564	0	3,564	$0
18	MV10	8	L			127	1.02	$597	HP50	8		58	0.46	$4,826	48	52	2,536	1,158	1,378	($4,229)
19	MV10	12	C			127	1.52	$2,885	HP50	8		58	0.46	$4,826	48	52	3,804	1,158	2,646	($1,941)
	MV10	12	C			127	1.52	$2,885	HP50	8		58	0.46	$4,826	48	52	3,804	1,158	2,646	($1,941)
New Panel								$1,500												$1,500
Page Total		206					35.47	$53,245		117			11.10	$80,857			88,538	17,008	71,530	($27,612)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
20	I200	12	C			200	2.40	$3,154	HP50	8		58	0.46	$4,826	48	52	5,990	1,158	4,832	($1,673)
*	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
*	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
21	I200	14	C	120	11	200	2.80	$3,233	HP50	10		58	0.58	$6,033	48	52	6,989	1,448	5,541	($2,800)
22	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
23	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
24	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
25	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
26	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
27	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
28	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
29	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
30	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	2	C	475	44	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
31 *	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
*	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
32	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	F312	1	C	720	67	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
33	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
34	I200	17	C			200	3.40	$4,022	HP50	12		58	0.70	$7,240	48	52	8,486	1,737	6,749	($3,218)
	F312	1	C	450	42	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
35	I200	5	C	315	29	200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
36	I200	3	C	120	11	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
37	I200	3	C	255	24	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
38	I200	14	R			200	2.80	$558	HP50	12		58	0.70	$7,240	48	52	6,989	1,737	5,252	($6,682)
RE	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	869	2,127	($3,381)
RN	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
	I200	3	L			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
RC	I200	15	R			200	3.00	$598	HP50	13		58	0.75	$7,843	48	52	7,488	1,882	5,606	($7,245)
Page Total		173					34.12	$35,816		126			7.34	$76,668			85,174	18,311	66,863	($40,852)
Building Tot		379					69.60	$89,061		243			18.43	$157,525			173,712	35,318	138,393	($68,464)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	9	C	23	19	437	5.77	30%	30%	20%	0.243	1	3400	30600	0.86	14.71
2	I200	6	C	23	21	483	5.47	30%	30%	20%	0.252	1	3400	20400	0.86	9.20
	I200	5	C	23	21	483	5.47	30%	30%	20%	0.252	1	3400	17000	0.86	7.67
3	I200	3	C	19	19	361	6.32	30%	30%	20%	0.227	1	3400	10200	0.86	5.54
4	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
	F312	1	C	24	19	456	5.66	30%	30%	20%						
5	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
6	I200	6	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	20400	0.86	9.22
7	I200	2	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	6800	0.86	3.17
	I200	5	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	17000	0.86	7.93
	F312	1	C	24	19	456	5.66	30%	30%	20%						
8	I200	9	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	30600	0.86	13.83
9	I200	9	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	30600	0.86	14.27
10	I200	5	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	17000	0.86	7.93
11	I200	6	C	24	18	432	5.83	30%	30%	20%	0.241	1	3400	20400	0.86	9.84
12	I200	7	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	23800	0.86	11.10
13	I200	5	C	24	16	384	6.25	30%	30%	20%	0.229	1	3400	17000	0.86	8.76
14	I200	3	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	10200	0.86	4.61
	I200	3	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	10200	0.86	4.61
15	I200	7	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	23800	0.86	10.76
	I200	3	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	10200	0.86	4.61
	I200	5	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	17000	0.86	7.69
16	I200	7	C	84	24	2016	3.21	30%	30%	20%	0.350	1	3400	23800	0.86	3.57
	I200	9	C	84	24	2016	3.21	30%	30%	20%	0.350	1	3400	30600	0.86	4.59
	I200	5	C	84	24	2016	3.21	30%	30%	20%	0.350	1	3400	17000	0.86	2.55
	F312	2	C	84	24	2016	3.21	30%	30%	20%						
*	F312	2	C	84	24	2016	3.21	30%	30%	20%						
*	F312	1	C	84	24	2016	3.21	30%	30%	20%						
17	MH10	12	C	39	24	936	4.04	30%	30%	20%	0.306	1	6390	76680	0.92	23.10
	MH10	12	C	39	24	936	4.04	30%	30%	20%	0.306	1	6390	76680	0.92	23.10
	MH10	12	C	39	24	936	4.04	30%	30%	20%	0.306	1	6390	76680	0.92	23.10
18	MV10	8	L	17	70	1190	1.83	30%	30%	20%	0.440	1	2800	22400	0.81	6.67
19	MV10	12	C	39	22	858	4.27	30%	30%	20%	0.297	1	2800	33600	0.81	9.36
	MV10	12	C	39	22	858	4.27	30%	30%	20%	0.297	1	2800	33600	0.81	9.36

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
20	I200	12	C	84	26	2184	3.02	30%	30%	20%	0.360	1	3400	40800	0.86	5.81
*	I200	7	C	84	26	2184	3.02	30%	30%	20%	0.360	1	3400	23800	0.86	3.39
*	F312	2	C	84	26	2184	3.02	30%	30%	20%						
	F312	1	C	84	26	2184	3.02	30%	30%	20%						
21	I200	14	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	47600	0.86	21.52
22	I200	6	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	20400	0.86	9.22
23	I200	5	C	24	16	384	6.25	30%	30%	20%	0.229	1	3400	17000	0.86	8.76
24	I200	6	C	24	16	384	6.25	30%	30%	20%	0.229	1	3400	20400	0.86	10.52
25	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
26	I200	2	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	6800	0.86	3.17
27	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
28	I200	6	C	30	24	720	4.50	30%	30%	20%	0.287	1	3400	20400	0.86	7.03
29	I200	5	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	17000	0.86	7.69
	I200	2	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	6800	0.86	3.07
30	I200	3	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	10200	0.86	4.61
	F312	2	C	24	20	480	5.50	30%	30%	20%						
31 *	I200	5	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	17000	0.86	7.93
*	I200	2	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	6800	0.86	3.17
32	I200	3	C	20	10	200	9.00	30%	30%	20%	0.164	1	3400	10200	0.86	7.23
	I200	2	C	20	10	200	9.00	30%	30%	20%	0.164	1	3400	6800	0.86	4.82
	F312	1	C	20	10	200	9.00	30%	30%	20%						
33	I200	3	C	14	13	182	8.90	30%	30%	20%	0.166	1	3400	10200	0.86	8.04
34	I200	17	C	60	12	720	6.00	30%	30%	20%	0.236	1	3400	57800	0.86	16.38
	F312	1	C	60	12	720	6.00	30%	30%	20%						
35	I200	5	C	14	13	182	8.90	30%	30%	20%	0.166	1	3400	17000	0.86	13.40
36	I200	3	C	14	14	196	8.57	30%	30%	20%	0.172	1	3400	10200	0.86	7.74
37	I200	3	C	14	13	182	8.90	30%	30%	20%	0.166	1	3400	10200	0.86	8.04
	I200	2	C	14	13	182	8.90	30%	30%	20%	0.166	1	3400	6800	0.86	5.36
38	I200	14	R	100	8	800	3.38	30%	30%	20%	0.341	1	3400	47600	0.86	17.54
RE	I200	6	R	240	8	1920	3.23	30%	30%	20%	0.349	1	3400	20400	0.86	3.21
RN	I200	3	R	66	8	528	3.50	30%	30%	20%	0.335	1	3400	10200	0.86	5.59
	I200	3	L	66	8	528	3.50	30%	30%	20%	0.335	1	3400	10200	0.86	5.59
RC	I200	15	R	120	8	960	3.33	30%	30%	20%	0.349	1	3400	51000	0.86	16.03

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	6	C	23	19	437	5.77	30%	30%	20%	0.205	1	4000	24000	0.90	10.16
2	MH70	4	C	23	21	483	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.40
	MH70	3	C	23	21	483	5.47	30%	30%	20%	0.214	1	4000	12000	0.90	4.80
3	MH70	2	C	19	19	361	6.32	30%	30%	20%	0.191	1	4000	8000	0.90	3.82
4	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F208	1	C	24	19	456	5.66	30%	30%	20%						
5	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
6	MH70	4	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	16000	0.90	6.40
7	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
	F208	1	C	24	19	456	5.66	30%	30%	20%						
8	MH70	6	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	24000	0.90	9.61
9	MH70	6	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	24000	0.90	9.92
10	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
11	MH70	4	C	24	18	432	5.83	30%	30%	20%	0.204	1	4000	16000	0.90	6.82
12	MH70	5	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	20000	0.90	8.27
13	MH70	3	C	24	16	384	6.25	30%	30%	20%	0.193	1	4000	12000	0.90	5.44
14	MH70	2	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	8000	0.90	3.20
	MH70	2	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	8000	0.90	3.20
15	MH70	5	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	20000	0.90	8.01
	MH70	2	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	8000	0.90	3.20
	MH70	3	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	12000	0.90	4.80
16	MH70	5	C	84	24	2016	3.21	30%	30%	20%	0.306	1	4000	20000	0.90	2.74
	MH70	6	C	84	24	2016	3.21	30%	30%	20%	0.306	1	4000	24000	0.90	3.29
	MH70	3	C	84	24	2016	3.21	30%	30%	20%	0.306	1	4000	12000	0.90	1.64
	F208	2	C	84	24	2016	3.21	30%	30%	20%						
*	F208	2	C	84	24	2016	3.21	30%	30%	20%						
*	F208	1	C	84	24	2016	3.21	30%	30%	20%						
17	MH10	8	C	39	24	936	4.04	30%	30%	20%						
	MH10	8	C	39	24	936	4.04	30%	30%	20%						
	MH10	8	C	39	24	936	4.04	30%	30%	20%						
18	MH70	8	L	17	70	1190	1.83	30%	30%	20%	0.398	1	4000	32000	0.90	9.65
19	MH70	8	C	39	22	858	4.27	30%	30%	20%	0.255	1	4000	32000	0.90	8.58
	MH70	8	C	39	22	858	4.27	30%	30%	20%	0.255	1	4000	32000	0.90	8.58

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
20	MH70	8	C	84	26	2184	3.02	30%	30%	20%	0.316	1	4000	32000	0.90	4.18
*	MH70	5	C	84	26	2184	3.02	30%	30%	20%	0.316	1	4000	20000	0.90	2.61
*	F208	2	C	84	26	2184	3.02	30%	30%	20%						
*	F208	1	C	84	26	2184	3.02	30%	30%	20%						
21	MH70	10	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	40000	0.90	16.01
22	MH70	4	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	16000	0.90	6.40
23	MH70	3	C	24	16	384	6.25	30%	30%	20%	0.193	1	4000	12000	0.90	5.44
24	MH70	4	C	24	16	384	6.25	30%	30%	20%	0.193	1	4000	16000	0.90	7.25
25	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
26	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
27	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
28	MH70	4	C	30	24	720	4.50	30%	30%	20%	0.247	1	4000	16000	0.90	4.95
29	MH70	3	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	12000	0.90	4.80
	MH70	1	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	4000	0.90	1.60
30	MH70	2	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	8000	0.90	3.20
	F208	2	C	24	20	480	5.50	30%	30%	20%						
31 *	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
*	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
32	MH70	2	C	20	10	200	9.00	30%	30%	20%	0.136	1	4000	8000	0.90	4.91
	MH70	1	C	20	10	200	9.00	30%	30%	20%	0.136	1	4000	4000	0.90	2.45
	F208	1	C	20	10	200	9.00	30%	30%	20%						
33	MH70	2	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	8000	0.90	5.47
34	MH70	12	C	60	12	720	6.00	30%	30%	20%	0.199	1	4000	48000	0.90	11.97
	F208	1	C	60	12	720	6.00	30%	30%	20%						
35	MH70	3	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	12000	0.90	8.21
36	MH70	2	C	14	14	196	8.57	30%	30%	20%	0.143	1	4000	8000	0.90	5.27
37	MH70	2	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	8000	0.90	5.47
	MH70	1	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	4000	0.90	2.74
38	MH70	14	R	100	8	800	3.38	30%	30%	20%	0.298	1	4000	56000	0.90	18.82
RE	MH70	6	R	240	8	1920	3.23	30%	30%	20%	0.305	1	4000	24000	0.90	3.44
RN	MH70	3	R	66	8	528	3.50	30%	30%	20%	0.292	1	4000	12000	0.90	5.99
	MH70	3	L	66	8	528	3.50	30%	30%	20%	0.292	1	4000	12000	0.90	5.99
RC	MH70	15	R	120	8	960	3.33	30%	30%	20%	0.305	1	4000	60000	0.90	17.20

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	6	C	23	19	437	5.77	30%	30%	20%	0.322	1	5450	32700	0.94	22.67
2	HP70	4	C	23	21	483	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	14.27
	HP70	3	C	23	21	483	5.47	30%	30%	20%	0.336	1	5450	16350	0.94	10.70
3	HP70	2	C	19	19	361	6.32	30%	30%	20%	0.299	1	5450	10900	0.94	8.49
4	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F208	1	C	24	19	456	5.66	30%	30%	20%						
5	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
6	HP70	4	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	21800	0.94	14.32
7	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
	F208	1	C	24	19	456	5.66	30%	30%	20%						
8	HP70	6	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	32700	0.94	21.47
9	HP70	6	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	32700	0.94	22.06
10	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
11	HP70	4	C	24	18	432	5.83	30%	30%	20%	0.320	1	5450	21800	0.94	15.19
12	HP70	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	27250	0.94	18.39
13	HP70	3	C	24	16	384	6.25	30%	30%	20%	0.302	1	5450	16350	0.94	12.10
14	HP70	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	10900	0.94	7.16
	HP70	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	10900	0.94	7.16
15	HP70	5	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	27250	0.94	17.89
	HP70	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	10900	0.94	7.16
	HP70	3	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	16350	0.94	10.74
16	HP70	5	C	84	24	2016	3.21	30%	30%	20%	0.481	1	5450	27250	0.94	6.12
	HP70	6	C	84	24	2016	3.21	30%	30%	20%	0.481	1	5450	32700	0.94	7.34
	HP70	3	C	84	24	2016	3.21	30%	30%	20%	0.481	1	5450	16350	0.94	3.67
	F208	2	C	84	24	2016	3.21	30%	30%	20%						
*	F208	2	C	84	24	2016	3.21	30%	30%	20%						
*	F208	1	C	84	24	2016	3.21	30%	30%	20%						
17	MH10	8	C	39	24	936	4.04	30%	30%	20%						
	MH10	8	C	39	24	936	4.04	30%	30%	20%						
	MH10	8	C	39	24	936	4.04	30%	30%	20%						
18	HP70	8	L	17	70	1190	1.83	30%	30%	20%	0.611	1	5450	43600	0.94	21.06
19	HP70	8	C	39	22	858	4.27	30%	30%	20%	0.402	1	5450	43600	0.94	19.22
	HP70	8	C	39	22	858	4.27	30%	30%	20%	0.402	1	5450	43600	0.94	19.22

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
20	HP70	8	C	84	26	2184	3.02	30%	30%	20%	0.495	1	5450	43600	0.94	9.30
*	HP70	5	C	84	26	2184	3.02	30%	30%	20%	0.495	1	5450	27250	0.94	5.81
*	F208	2	C	84	26	2184	3.02	30%	30%	20%						
	F208	1	C	84	26	2184	3.02	30%	30%	20%						
21	HP70	10	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	54500	0.94	35.79
22	HP70	4	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	21800	0.94	14.32
23	HP70	3	C	24	16	384	6.25	30%	30%	20%	0.302	1	5450	16350	0.94	12.10
24	HP70	4	C	24	16	384	6.25	30%	30%	20%	0.302	1	5450	21800	0.94	16.13
25	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
26	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
27	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
28	HP70	4	C	30	24	720	4.50	30%	30%	20%	0.388	1	5450	21800	0.94	11.05
29	HP70	3	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	16350	0.94	10.74
	HP70	1	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	5450	0.94	3.58
30	HP70	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	10900	0.94	7.16
	F208	2	C	24	20	480	5.50	30%	30%	20%						
31 *	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
*	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
32	HP70	2	C	20	10	200	9.00	30%	30%	20%	0.210	1	5450	10900	0.94	10.77
	HP70	1	C	20	10	200	9.00	30%	30%	20%	0.210	1	5450	5450	0.94	5.38
	F208	1	C	20	10	200	9.00	30%	30%	20%						
33	HP70	2	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	10900	0.94	12.00
34	HP70	12	C	60	12	720	6.00	30%	30%	20%	0.312	1	5450	65400	0.94	26.67
	F208	1	C	60	12	720	6.00	30%	30%	20%						
35	HP70	3	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	16350	0.94	18.00
36	HP70	2	C	14	14	196	8.57	30%	30%	20%	0.222	1	5450	10900	0.94	11.62
37	HP70	2	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	10900	0.94	12.00
	HP70	1	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	5450	0.94	6.00
38	HP50	9	R	100	8	800	3.38	30%	30%	20%	0.467	1	3600	32400	0.94	17.80
RE	HP50	6	R	240	8	1920	3.23	30%	30%	20%	0.479	1	3600	21600	0.94	5.07
RN	HP50	3	R	66	8	528	3.50	30%	30%	20%	0.458	1	3600	10800	0.94	8.81
	HP70	3	L	66	8	528	3.50	30%	30%	20%	0.458	1	5450	16350	0.94	13.34
RC	HP50	10	R	120	8	960	3.33	30%	30%	20%	0.479	1	3600	36000	0.94	16.90

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	6	C	23	19	437	5.77	30%	30%	20%	0.205	1	4000	24000	0.90	10.16
2	MH70	4	C	23	21	483	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.40
	MH70	3	C	23	21	483	5.47	30%	30%	20%	0.214	1	4000	12000	0.90	4.80
3	MH70	2	C	19	19	361	6.32	30%	30%	20%	0.191	1	4000	8000	0.90	3.82
4	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F312	1	C	24	19	456	5.66	30%	30%	20%						
5	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
6	MH70	4	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	16000	0.90	6.40
7	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
	F312	1	C	24	19	456	5.66	30%	30%	20%						
8	MH70	6	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	24000	0.90	9.61
9	MH70	6	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	24000	0.90	9.92
10	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
11	MH70	4	C	24	18	432	5.83	30%	30%	20%	0.204	1	4000	16000	0.90	6.82
12	MH70	5	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	20000	0.90	8.27
13	MH70	3	C	24	16	384	6.25	30%	30%	20%	0.193	1	4000	12000	0.90	5.44
14	MH70	2	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	8000	0.90	3.20
	MH70	2	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	8000	0.90	3.20
15	MH70	5	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	20000	0.90	8.01
	MH70	2	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	8000	0.90	3.20
	MH70	3	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	12000	0.90	4.80
16	MH70	5	C	84	24	2016	3.21	30%	30%	20%	0.306	1	4000	20000	0.90	2.74
	MH70	6	C	84	24	2016	3.21	30%	30%	20%	0.306	1	4000	24000	0.90	3.29
	MH70	3	C	84	24	2016	3.21	30%	30%	20%	0.306	1	4000	12000	0.90	1.64
	F312	2	C	84	24	2016	3.21	30%	30%	20%						
*	F312	2	C	84	24	2016	3.21	30%	30%	20%						
*	F312	1	C	84	24	2016	3.21	30%	30%	20%						
17	MH10	8	C	39	24	936	4.04	30%	30%	20%						
	MH10	8	C	39	24	936	4.04	30%	30%	20%						
	MH10	8	C	39	24	936	4.04	30%	30%	20%						
18	MH70	8	L	17	70	1190	1.83	30%	30%	20%	0.398	1	4000	32000	0.90	9.65
19	MH70	8	C	39	22	858	4.27	30%	30%	20%	0.255	1	4000	32000	0.90	8.58
	MH70	8	C	39	22	858	4.27	30%	30%	20%	0.255	1	4000	32000	0.90	8.58

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
20	MH70	8	C	84	26	2184	3.02	30%	30%	20%	0.316	1	4000	32000	0.90	4.18
*	MH70	5	C	84	26	2184	3.02	30%	30%	20%	0.316	1	4000	20000	0.90	2.61
*	F312	2	C	84	26	2184	3.02	30%	30%	20%						
	F312	1	C	84	26	2184	3.02	30%	30%	20%						
21	MH70	10	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	40000	0.90	16.01
22	MH70	4	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	16000	0.90	6.40
23	MH70	3	C	24	16	384	6.25	30%	30%	20%	0.193	1	4000	12000	0.90	5.44
24	MH70	4	C	24	16	384	6.25	30%	30%	20%	0.193	1	4000	16000	0.90	7.25
25	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
26	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
27	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
28	MH70	4	C	30	24	720	4.50	30%	30%	20%	0.247	1	4000	16000	0.90	4.95
29	MH70	3	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	12000	0.90	4.80
	MH70	1	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	4000	0.90	1.60
30	MH70	2	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	8000	0.90	3.20
	F312	2	C	24	20	480	5.50	30%	30%	20%						
31 *	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
*	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
32	MH70	2	C	20	10	200	9.00	30%	30%	20%	0.136	1	4000	8000	0.90	4.91
	MH70	1	C	20	10	200	9.00	30%	30%	20%	0.136	1	4000	4000	0.90	2.45
	F312	1	C	20	10	200	9.00	30%	30%	20%						
33	MH70	2	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	8000	0.90	5.47
34	MH70	12	C	60	12	720	6.00	30%	30%	20%	0.199	1	4000	48000	0.90	11.97
	F312	1	C	60	12	720	6.00	30%	30%	20%						
35	MH70	3	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	12000	0.90	8.21
36	MH70	2	C	14	14	196	8.57	30%	30%	20%	0.143	1	4000	8000	0.90	5.27
37	MH70	2	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	8000	0.90	5.47
	MH70	1	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	4000	0.90	2.74
38	MH70	14	R	100	8	800	3.38	30%	30%	20%	0.298	1	4000	56000	0.90	18.82
RE	MH70	6	R	240	8	1920	3.23	30%	30%	20%	0.305	1	4000	24000	0.90	3.44
RN	MH70	3	R	66	8	528	3.50	30%	30%	20%	0.292	1	4000	12000	0.90	5.99
	MH70	3	L	66	8	528	3.50	30%	30%	20%	0.292	1	4000	12000	0.90	5.99
RC	MH70	15	R	120	8	960	3.33	30%	30%	20%	0.305	1	4000	60000	0.90	17.20

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	6	C	23	19	437	5.77	30%	30%	20%	0.322	1	5450	32700	0.94	22.67
2	HP70	4	C	23	21	483	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	14.27
	HP70	3	C	23	21	483	5.47	30%	30%	20%	0.336	1	5450	16350	0.94	10.70
3	HP70	2	C	19	19	361	6.32	30%	30%	20%	0.299	1	5450	10900	0.94	8.49
4	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F312	1	C	24	19	456	5.66	30%	30%	20%						
5	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
6	HP70	4	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	21800	0.94	14.32
7	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
	F312	1	C	24	19	456	5.66	30%	30%	20%						
8	HP70	6	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	32700	0.94	21.47
9	HP70	6	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	32700	0.94	22.06
10	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
11	HP70	4	C	24	18	432	5.83	30%	30%	20%	0.320	1	5450	21800	0.94	15.19
12	HP70	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	27250	0.94	18.39
13	HP70	3	C	24	16	384	6.25	30%	30%	20%	0.302	1	5450	16350	0.94	12.10
14	HP70	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	10900	0.94	7.16
	HP70	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	10900	0.94	7.16
15	HP70	5	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	27250	0.94	17.89
	HP70	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	10900	0.94	7.16
	HP70	3	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	16350	0.94	10.74
16	HP70	5	C	84	24	2016	3.21	30%	30%	20%	0.481	1	5450	27250	0.94	6.12
	HP70	6	C	84	24	2016	3.21	30%	30%	20%	0.481	1	5450	32700	0.94	7.34
	HP70	3	C	84	24	2016	3.21	30%	30%	20%	0.481	1	5450	16350	0.94	3.67
	F312	2	C	84	24	2016	3.21	30%	30%	20%						
*	F312	2	C	84	24	2016	3.21	30%	30%	20%						
*	F312	1	C	84	24	2016	3.21	30%	30%	20%						
17	MH10	8	C	39	24	936	4.04	30%	30%	20%						
	MH10	8	C	39	24	936	4.04	30%	30%	20%						
	MH10	8	C	39	24	936	4.04	30%	30%	20%						
18	HP70	8	L	17	70	1190	1.83	30%	30%	20%	0.611	1	5450	43600	0.94	21.06
19	HP70	8	C	39	22	858	4.27	30%	30%	20%	0.402	1	5450	43600	0.94	19.22
	HP70	8	C	39	22	858	4.27	30%	30%	20%	0.402	1	5450	43600	0.94	19.22

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
20	HP70	8	C	84	26	2184	3.02	30%	30%	20%	0.495	1	5450	43600	0.94	9.30
*	HP70	5	C	84	26	2184	3.02	30%	30%	20%	0.495	1	5450	27250	0.94	5.81
*	F312	2	C	84	26	2184	3.02	30%	30%	20%						
	F312	1	C	84	26	2184	3.02	30%	30%	20%						
21	HP70	10	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	54500	0.94	35.79
22	HP70	4	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	21800	0.94	14.32
23	HP70	3	C	24	16	384	6.25	30%	30%	20%	0.302	1	5450	16350	0.94	12.10
24	HP70	4	C	24	16	384	6.25	30%	30%	20%	0.302	1	5450	21800	0.94	16.13
25	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
26	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
27	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
28	HP70	4	C	30	24	720	4.50	30%	30%	20%	0.388	1	5450	21800	0.94	11.05
29	HP70	3	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	16350	0.94	10.74
	HP70	1	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	5450	0.94	3.58
30	HP70	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	10900	0.94	7.16
	F312	2	C	24	20	480	5.50	30%	30%	20%						
31 *	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
*	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
32	HP70	2	C	20	10	200	9.00	30%	30%	20%	0.210	1	5450	10900	0.94	10.77
	HP70	1	C	20	10	200	9.00	30%	30%	20%	0.210	1	5450	5450	0.94	5.38
	F312	1	C	20	10	200	9.00	30%	30%	20%						
33	HP70	2	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	10900	0.94	12.00
34	HP70	12	C	60	12	720	6.00	30%	30%	20%	0.312	1	5450	65400	0.94	26.67
	F312	1	C	60	12	720	6.00	30%	30%	20%						
35	HP70	3	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	16350	0.94	18.00
36	HP70	2	C	14	14	196	8.57	30%	30%	20%	0.222	1	5450	10900	0.94	11.62
37	HP70	2	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	10900	0.94	12.00
	HP70	1	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	5450	0.94	6.00
38	HP50	14	R	100	8	800	3.38	30%	30%	20%	0.467	1	3600	50400	0.94	27.68
RE	HP50	6	R	240	8	1920	3.23	30%	30%	20%	0.479	1	3600	21600	0.94	5.07
RN	HP50	3	R	66	8	528	3.50	30%	30%	20%	0.458	1	3600	10800	0.94	8.81
	HP70	3	L	66	8	528	3.50	30%	30%	20%	0.458	1	5450	16350	0.94	13.34
RC	HP50	15	R	120	8	960	3.33	30%	30%	20%	0.479	1	3600	54000	0.94	25.35

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	6	C	23	19	437	5.77	30%	30%	20%	0.322	1	3600	21600	0.94	14.98
2	HP50	4	C	23	21	483	5.47	30%	30%	20%	0.336	1	3600	14400	0.94	9.43
	HP50	3	C	23	21	483	5.47	30%	30%	20%	0.336	1	3600	10800	0.94	7.07
3	HP50	2	C	19	19	361	6.32	30%	30%	20%	0.299	1	3600	7200	0.94	5.61
4	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
	F208	1	C	24	19	456	5.66	30%	30%	20%						
5	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
6	HP50	4	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	14400	0.94	9.46
7	HP50	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	3600	0.94	2.43
	HP50	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	10800	0.94	7.29
	F208	1	C	24	19	456	5.66	30%	30%	20%						
8	HP50	6	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	21600	0.94	14.18
9	HP50	6	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	21600	0.94	14.57
10	HP50	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	10800	0.94	7.29
11	HP50	4	C	24	18	432	5.83	30%	30%	20%	0.320	1	3600	14400	0.94	10.04
12	HP50	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	18000	0.94	12.15
13	HP50	3	C	24	16	384	6.25	30%	30%	20%	0.302	1	3600	10800	0.94	7.99
14	HP50	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	7200	0.94	4.73
	HP50	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	7200	0.94	4.73
15	HP50	5	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	18000	0.94	11.82
	HP50	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	7200	0.94	4.73
	HP50	3	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	10800	0.94	7.09
16	HP50	5	C	84	24	2016	3.21	30%	30%	20%	0.481	1	3600	18000	0.94	4.04
	HP50	6	C	84	24	2016	3.21	30%	30%	20%	0.481	1	3600	21600	0.94	4.85
	HP50	3	C	84	24	2016	3.21	30%	30%	20%	0.481	1	3600	10800	0.94	2.42
	F208	2	C	84	24	2016	3.21	30%	30%	20%						
*	F208	2	C	84	24	2016	3.21	30%	30%	20%						
*	F208	1	C	84	24	2016	3.21	30%	30%	20%						
17	MH10	8	C	39	24	936	4.04	30%	30%	20%						
	MH10	8	C	39	24	936	4.04	30%	30%	20%						
	MH10	8	C	39	24	936	4.04	30%	30%	20%						
18	HP50	8	L	17	70	1190	1.83	30%	30%	20%	0.611	1	3600	28800	0.94	13.91
19	HP50	8	C	39	22	858	4.27	30%	30%	20%	0.402	1	3600	28800	0.94	12.70
	HP50	8	C	39	22	858	4.27	30%	30%	20%	0.402	1	3600	28800	0.94	12.70

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
20	HP50	8	C	84	26	2184	3.02	30%	30%	20%	0.495	1	3600	28800	0.94	6.14
*	HP50	5	C	84	26	2184	3.02	30%	30%	20%	0.495	1	3600	18000	0.94	3.84
*	F208	2	C	84	26	2184	3.02	30%	30%	20%						
	F208	1	C	84	26	2184	3.02	30%	30%	20%						
21	HP50	10	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	36000	0.94	23.64
22	HP50	4	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	14400	0.94	9.46
23	HP50	3	C	24	16	384	6.25	30%	30%	20%	0.302	1	3600	10800	0.94	7.99
24	HP50	4	C	24	16	384	6.25	30%	30%	20%	0.302	1	3600	14400	0.94	10.66
25	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
26	HP50	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	3600	0.94	2.43
27	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
28	HP50	4	C	30	24	720	4.50	30%	30%	20%	0.388	1	3600	14400	0.94	7.30
29	HP50	3	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	10800	0.94	7.09
	HP50	1	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	3600	0.94	2.36
30	HP50	2	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	7200	0.94	4.73
	F208	2	C	24	20	480	5.50	30%	30%	20%						
31 *	HP50	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	10800	0.94	7.29
*	HP50	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	3600	0.94	2.43
32	HP50	2	C	20	10	200	9.00	30%	30%	20%	0.210	1	3600	7200	0.94	7.11
	HP50	1	C	20	10	200	9.00	30%	30%	20%	0.210	1	3600	3600	0.94	3.56
	F208	1	C	20	10	200	9.00	30%	30%	20%						
33	HP50	2	C	14	13	182	8.90	30%	30%	20%	0.213	1	3600	7200	0.94	7.93
34	HP50	12	C	60	12	720	6.00	30%	30%	20%	0.312	1	3600	43200	0.94	17.61
	F208	1	C	60	12	720	6.00	30%	30%	20%						
35	HP50	3	C	14	13	182	8.90	30%	30%	20%	0.213	1	3600	10800	0.94	11.89
36	HP50	2	C	14	14	196	8.57	30%	30%	20%	0.222	1	3600	7200	0.94	7.67
37	HP50	2	C	14	13	182	8.90	30%	30%	20%	0.213	1	3600	7200	0.94	7.93
	HP50	1	C	14	13	182	8.90	30%	30%	20%	0.213	1	3600	3600	0.94	3.96
38	HP50	12	R	100	8	800	3.38	30%	30%	20%	0.467	1	3600	43200	0.94	23.73
RE	HP50	6	R	240	8	1920	3.23	30%	30%	20%	0.479	1	3600	21600	0.94	5.07
RN	HP50	3	R	66	8	528	3.50	30%	30%	20%	0.458	1	3600	10800	0.94	8.81
	HP50	3	L	66	8	528	3.50	30%	30%	20%	0.458	1	3600	10800	0.94	8.81
RC	HP50	13	R	120	8	960	3.33	30%	30%	20%	0.479	1	3600	46800	0.94	21.97

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
2	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
3	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
4	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
5	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
6	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
7	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
8	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
9	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
10	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
11	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
12	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
13	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
14	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
15	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
16	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
*	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
*	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
17	MH10	12	C	2496	1	10500	2.9	$194	0.2	$44	4.0	$105	$343
	MH10	12	C	2496	1	10500	2.9	$194	0.2	$44	4.0	$105	$343
	MH10	12	C	2496	1	10500	2.9	$194	0.2	$44	4.0	$105	$343
18	MV10	8	L	2496	1	16800	1.2	$33	0.2	$22	2.7	$70	$125
19	MV10	12	C	2496	1	16800	1.8	$50	0.2	$33	4.0	$105	$187
	MV10	12	C	2496	1	16800	1.8	$50	0.2	$33	4.0	$105	$187
Page Total		206						$5,402		$234		$1,323	$6,960

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
20	I200	12	C	2496	1	700	42.8	$427	0.0	$0	4.0	$63	$489
*	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
*	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
21	I200	14	C	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
22	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
23	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
24	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
25	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
26	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
27	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
28	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
29	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
30	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
31 *	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
*	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
32	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
33	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
34	I200	17	C	2496	1	700	60.6	$604	0.0	$0	5.7	$89	$693
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
35	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
36	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
37	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
38	I200	14	R	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
RE	I200	6	R	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
RN	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	3	L	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
RC	I200	15	R	2496	1	700	53.5	$533	0.0	$0	5.0	$79	$612
Page Total		173						$5,933		$13		$914	$6,860
Building Total		379						$11,335		$247		$2,237	$13,819

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
2	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
3	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
4	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
6	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
7	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
8	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
9	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
10	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
11	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
12	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
13	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
14	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
15	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
16	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
*	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
*	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
17	MH10	8	C											
	MH10	8	C											
	MH10	8	C											
18	MH70	8	L	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($220)
19	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($158)
	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($158)
Page Total		141						$3,409		$407		$1,003	$4,820	$1,112

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
20	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
*	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
*	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
21	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
22	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
23	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
24	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
25	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
26	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
27	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
28	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
29	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
30	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
31 *	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
*	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
32	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
33	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
34	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
35	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
36	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
37	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
38	MH70	14	R	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	($33)
RE	MH70	6	R	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	($14)
RN	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
	MH70	3	L	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
RC	MH70	15	R	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	($35)
Page Total		130						$3,810		$454		$1,117	$5,381	$1,479
Building Total		271						$7,219		$862		$2,120	$10,200	$2,591

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11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
2	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
3	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
4	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
6	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
7	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
8	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
9	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
10	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
11	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
12	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
13	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
14	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
15	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
16	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
*	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
*	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
17	MH10	8	C											
	MH10	8	C											
	MH10	8	C											
18	HP70	8	L	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	($22)
19	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$41
	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$41
Page Total		141						$665		$421		$1,003	$2,089	$3,843

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
20	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
*	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
*	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
21	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
22	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
23	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
24	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
25	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
26	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
27	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
28	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
29	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
30	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
31 *	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
*	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
32	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
33	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
34	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
35	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
36	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
37	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
38	HP50	9	R	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$402
RE	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
RN	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
	HP70	3	L	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$67
RC	HP50	10	R	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$424
Page Total		120						$698		$428		$1,029	$2,156	$4,703
Building Total		261						$1,363		$849		$2,033	$4,245	$8,546

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
2	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
3	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
4	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
5	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
6	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
7	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
8	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
9	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
10	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
11	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
12	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
13	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
14	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
15	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
16	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
*	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
*	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
17	MH10	8	C											
	MH10	8	C											
	MH10	8	C											
18	MH70	8	L	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($220)
19	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($158)
	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($158)
Page Total		141						$3,423		$409		$1,003	$4,835	$1,096

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
20	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
*	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
*	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
21	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
22	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
23	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
24	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
25	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
26	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
27	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
28	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
29	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
30	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
31 *	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
*	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
32	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
33	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
34	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
35	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
36	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
37	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
38	MH70	14	R	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	($33)
RE	MH70	6	R	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	($14)
RN	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
	MH70	3	L	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
RC	MH70	15	R	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	($35)
Page Total		130						$3,824		$455		$1,117	$5,396	$1,464
Building Total		271						$7,247		$864		$2,120	$10,231	$2,560

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
2	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
3	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
4	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
5	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
6	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
7	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
8	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
9	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
10	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
11	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
12	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
13	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
14	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
15	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
16	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
*	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
*	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
17	MH10	8	C											
	MH10	8	C											
	MH10	8	C											
18	HP70	8	L	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	($22)
19	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$41
	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$41
Page Total		141						$679		$422		$1,003	$2,104	$3,827

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
20	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
*	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
*	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
21	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
22	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
23	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
24	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
25	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
26	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
27	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
28	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
29	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
30	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
31 *	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
*	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
32	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
33	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
34	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
35	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
36	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
37	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
38	HP50	14	R	2496	1	16800	2.1	$90	0.3	$50	4.7	$122	$263	$308
RE	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
RN	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
	HP70	3	L	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$67
RC	HP50	15	R	2496	1	16800	2.2	$97	0.3	$54	5.0	$131	$282	$330
Page Total		130						$777		$466		$1,117	$2,359	$4,500
Building Total		271						$1,456		$887		$2,120	$4,463	$8,328

VI-88

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
2	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
3	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
4	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
6	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
7	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
8	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
9	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
10	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
11	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
12	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
13	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
14	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
15	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
16	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
*	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
*	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
17	MH10	8	C											
	MH10	8	C											
	MH10	8	C											
18	HP50	8	L	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	($25)
19	HP50	8	C	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$37
	HP50	8	C	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$37
Page Total		141						$728		$407		$1,003	$2,138	$3,793

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-4
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
20	HP50	8	C	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$339
*	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
*	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
21	HP50	10	C	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$383
22	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
23	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
24	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
25	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
26	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
27	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
28	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
29	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
30	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
31 *	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
*	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
32	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
33	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
34	HP50	12	C	2496	1	16800	1.8	$77	0.2	$43	4.0	$105	$225	$468
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
35	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
36	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
37	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
38	HP50	12	R	2496	1	16800	1.8	$77	0.2	$43	4.0	$105	$225	$346
RE	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
RN	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
	HP50	3	L	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RC	HP50	13	R	2496	1	16800	1.9	$84	0.3	$47	4.3	$113	$244	$368
Page Total		126						$786		$440		$1,082	$2,307	$4,552
Building Total		267						$1,513		$847		$2,085	$4,445	$8,346

VI-20

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	6	9-0	C	32	90	8	200	1.20	$154	$0	$85	I200	2	200	0.40	$1,417	I200	8	48	52	2,995	998	3,994	$1,657
New Panel																	$1,500								
Building Total		6							1.20	$154	$0	$85		2		0.40	$2,917					2,995	998	3,994	$3,157

V1-91

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	8	C	90	8	200	1.60	$1,657	MH70	6		89	0.53	$3,305	48	52	3,994	1,333	2,661	($1,648)
New Panel								$1,500												
Building Total		8					1.60	$3,157		6			0.53	$3,305			3,994	1,333	2,661	($1,648)

V1-92

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	8	C	90	8	200	1.60	$1,657	HP70	6		99	0.59	$3,702	48	52	3,994	1,483	2,511	($2,045)
New Panel								$1,500												
Building Total	8						1.60	$3,157		6			0.59	$3,702			3,994	1,483	2,511	($2,045)

11/9/94

VI-93

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	8	C	90	8	200	1.60	$1,657	MH70	6		89	0.53	$3,305	48	52	3,994	1,333	2,661	($1,648)
New Panel								$1,500												
Building Total		8					1.60	$3,157		6			0.53	$3,305			3,994	1,333	2,661	($1,648)

V1-94

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	8	C	90	8	200	1.60	$1,657	HP70	6		99	0.59	$3,702	48	52	3,994	1,483	2,511	($2,045)
New Panel								$1,500												
Building Total	8						1.60	$3,157		6			0.59	$3,702			3,994	1,483	2,511	($2,045)

VI-95

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	8	C	90	8	200	1.60	$1,657	HP50	6		58	0.35	$3,620	48	52	3,994	869	3,125	($1,963)
New Panel								$1,500												
Building Total	8						1.60	$3,157		6			0.35	$3,620			3,994	869	3,125	($1,963)

VI-96

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	8	C	30	18	540	5.33	30%	30%	20%	0.256	1	3400	27200	0.86	11.15

VI-97

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	6	C	30	18	540	5.33	30%	30%	20%	0.218	1	4000	24000	0.90	8.74

V1-98

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	6	C	30	18	540	5.33	30%	30%	20%	0.342	1	5450	32700	0.94	19.49

VI-99

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	6	C	30	18	540	5.33	30%	30%	20%	0.218	1	4000	24000	0.90	8.74

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	6	C	30	18	540	5.33	30%	30%	20%	0.342	1	5450	32700	0.94	19.49

VI-101

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	6	C	30	18	540	5.33	30%	30%	20%	0.342	1	3600	21600	0.94	12.87

VI-102

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	8	C	2496	1	700	28.5	$284	0.0	$0	2.7	$42	$326
Building Total		8						$284		$0		$42	$326

VI-103

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$67
Building Total		6						$185		$22		$52	$259	$67

VI-104

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$216
Building Total		6						$35		$22		$52	$110	$216

VI-105

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$67
Building Total		6						$185		$22		$52	$259	$67

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$216
Building Total		6						$35		$22		$52	$110	$216

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line A
Building A-6
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$214
Building Total		6						$39		$22		$52	$113	$214

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	4	8-0	C				200	0.80	$103	$0	$57	I200	1	200	0.20	$709	I200	5	48	52	1,997	499	2,496	$868
2	I200	2	6-6	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
3	I200	5	8-0	C				200	1.00	$128	$0	$71	I200	1	200	0.20	$709	I200	6	48	52	2,496	499	2,995	$908
4	I200	2	8-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
R1	I300	3	6-6	R				300	0.90	$90	$0	$46	I300	0	300	0.00	$0	I300	3	48	52	2,246	0	2,246	$136
R2	I300	1	7-0	R				300	0.30	$30	$0	$15	I300	0	300	0.00	$0	I300	1	48	52	749	0	749	$45
New Panel																	$1,500								$1,500
Building Total		17							3.80	$454	$0	$245		4		0.80	$4,335					9,485	1,997	11,482	$5,034

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	5	C			200	1.00	$868	MH70	4		89	0.36	$2,203	48	52	2,496	889	1,607	($1,335)
2	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	6	C			200	1.20	$908	MH70	5		89	0.45	$2,754	48	52	2,995	1,111	1,884	($1,846)
4	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
R1	I300	3	R			300	0.90	$136	MH70	3		89	0.27	$1,652	48	52	2,246	666	1,580	($1,517)
R2	I300	1	R			300	0.30	$45	MH70	1		89	0.09	$551	48	52	749	222	527	($506)
New Panel								$1,500												$1,500
Building Total		21					4.60	$5,034		17			1.51	$9,363			11,482	3,776	7,705	($4,329)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	5	C			200	1.00	$868	HP70	4		99	0.40	$2,468	48	52	2,496	988	1,508	($1,600)
2	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	6	C			200	1.20	$908	HP70	5		99	0.50	$3,085	48	52	2,995	1,236	1,760	($2,177)
4	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
R1	I300	3	R			300	0.90	$136	HP70	3		99	0.30	$1,851	48	52	2,246	741	1,505	($1,715)
R2	I300	1	R			300	0.30	$45	HP70	1		99	0.10	$617	48	52	749	247	502	($572)
New Panel								$1,500												$1,500
Building Total		21					4.60	$5,034		17			1.68	$10,488			11,482	4,201	7,281	($5,454)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	5	C			200	1.00	$868	MH70	4		89	0.36	$2,203	48	52	2,496	889	1,607	($1,335)
2	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	6	C			200	1.20	$908	MH70	5		89	0.45	$2,754	48	52	2,995	1,111	1,884	($1,846)
4	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
R1	I300	3	R			300	0.90	$136	MH70	3		89	0.27	$1,652	48	52	2,246	666	1,580	($1,517)
R2	I300	1	R			300	0.30	$45	MH70	1		89	0.09	$551	48	52	749	222	527	($506)
New Panel								$1,500												$1,500
Building Total		21					4.60	$5,034		17			1.51	$9,363			11,482	3,776	7,705	($4,329)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	5	C			200	1.00	$868	HP70	4		99	0.40	$2,468	48	52	2,496	988	1,508	($1,600)
2	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	6	C			200	1.20	$908	HP70	5		99	0.50	$3,085	48	52	2,995	1,236	1,760	($2,177)
4	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
R1	I300	3	R			300	0.90	$136	HP70	3		99	0.30	$1,851	48	52	2,246	741	1,505	($1,715)
R2	I300	1	R			300	0.30	$45	HP70	1		99	0.10	$617	48	52	749	247	502	($572)
New Panel								$1,500												$1,500
Building Total		21					4.60	$5,034		17			1.68	$10,488			11,482	4,201	7,281	($5,454)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparision					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	5	C			200	1.00	$868	HP50	4		58	0.23	$2,413	48	52	2,496	579	1,917	($1,545)
2	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
3	I200	6	C			200	1.20	$908	HP50	5		58	0.29	$3,017	48	52	2,995	724	2,271	($2,109)
4	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
R1	I300	3	R			300	0.90	$136	HP50	3		58	0.17	$1,810	48	52	2,246	434	1,812	($1,674)
R2	I300	1	R			300	0.30	$45	HP50	1		58	0.06	$603	48	52	749	145	604	($558)
New Panel								$1,500												$1,500
Building Total		21					4.60	$5,034		17			0.99	$10,256			11,482	2,461	9,021	($5,222)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	5	C	19	13.5	257	7.60	30%	30%	20%	0.193	1	3400	17000	0.86	11.06
2	I200	3	C	19	7	133	11.73	30%	30%	20%	0.140	1	3400	10200	0.86	9.28
3	I200	6	C	18	14	252	7.62	30%	30%	20%	0.193	1	3400	20400	0.86	13.51
4	I200	3	C	18	8	144	10.83	30%	30%	20%	0.140	1	3400	10200	0.86	8.57
R1	I300	3	R	16	5	80	6.56	30%	30%	20%	0.220	1	5190	15570	0.86	37.02
R2	I300	1	R	16	5	80	6.56	30%	30%	20%	0.220	1	5190	5190	0.86	12.34

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	4	C	19	13.5	257	7.60	30%	30%	20%	0.161	1	4000	16000	0.90	9.06
2	MH70	2	C	19	7	133	11.73	30%	30%	20%	0.115	1	4000	8000	0.90	6.24
3	MH70	5	C	18	14	252	7.62	30%	30%	20%	0.160	1	4000	20000	0.90	11.46
4	MH70	2	C	18	8	144	10.83	30%	30%	20%	0.115	1	4000	8000	0.90	5.76
R1	MH70	3	R	16	5	80	6.56	30%	30%	20%	0.185	1	4000	12000	0.90	25.03
R2	MH70	1	R	16	5	80	6.56	30%	30%	20%	0.185	1	4000	4000	0.90	8.34

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	4	C	19	13.5	257	7.60	30%	30%	20%	0.251	1	5450	21800	0.94	20.07
2	HP70	2	C	19	7	133	11.73	30%	30%	20%	0.178	1	5450	10900	0.94	13.73
3	HP70	5	C	18	14	252	7.62	30%	30%	20%	0.250	1	5450	27250	0.94	25.44
4	HP70	2	C	18	8	144	10.83	30%	30%	20%	0.178	1	5450	10900	0.94	12.68
R1	HP70	3	R	16	5	80	6.56	30%	30%	20%	0.290	1	5450	16350	0.94	55.77
R2	HP70	1	R	16	5	80	6.56	30%	30%	20%	0.290	1	5450	5450	0.94	18.59

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	4	C	19	13.5	257	7.60	30%	30%	20%	0.161	1	4000	16000	0.90	9.06
2	MH70	2	C	19	7	133	11.73	30%	30%	20%	0.115	1	4000	8000	0.90	6.24
3	MH70	5	C	18	14	252	7.62	30%	30%	20%	0.160	1	4000	20000	0.90	11.46
4	MH70	2	C	18	8	144	10.83	30%	30%	20%	0.115	1	4000	8000	0.90	5.76
R1	MH70	3	R	16	5	80	6.56	30%	30%	20%	0.185	1	4000	12000	0.90	25.03
R2	MH70	1	R	16	5	80	6.56	30%	30%	20%	0.185	1	4000	4000	0.90	8.34

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	4	C	19	13.5	257	7.60	30%	30%	20%	0.251	1	5450	21800	0.94	20.07
2	HP70	2	C	19	7	133	11.73	30%	30%	20%	0.178	1	5450	10900	0.94	13.73
3	HP70	5	C	18	14	252	7.62	30%	30%	20%	0.250	1	5450	27250	0.94	25.44
4	HP70	2	C	18	8	144	10.83	30%	30%	20%	0.178	1	5450	10900	0.94	12.68
R1	HP70	3	R	16	5	80	6.56	30%	30%	20%	0.290	1	5450	16350	0.94	55.77
R2	HP70	1	R	16	5	80	6.56	30%	30%	20%	0.290	1	5450	5450	0.94	18.59

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	4	C	19	13.5	257	7.60	30%	30%	20%	0.251	1	3600	14400	0.94	13.26
2	HP50	2	C	19	7	133	11.73	30%	30%	20%	0.178	1	3600	7200	0.94	9.07
3	HP50	5	C	18	14	252	7.62	30%	30%	20%	0.250	1	3600	18000	0.94	16.80
4	HP50	2	C	18	8	144	10.83	30%	30%	20%	0.178	1	3600	7200	0.94	8.37
R1	HP50	3	R	16	5	80	6.56	30%	30%	20%	0.290	1	3600	10800	0.94	36.84
R2	HP50	1	R	16	5	80	6.56	30%	30%	20%	0.290	1	3600	3600	0.94	12.28

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
2	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
3	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
4	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
R1	I300	3	R	2496	1	1750	4.3	$61	0.0	$0	1.0	$16	$77
R2	I300	1	R	2496	1	1750	1.4	$20	0.0	$0	0.3	$5	$26
Building Total		21						$685		$0		$110	$796

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$31
2	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$29
4	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
R1	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($53)
R2	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($18)
Building Total		17						$524		$61		$148	$734	$62

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$131
2	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$153
4	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
R1	HP70	3	R	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$22
R2	HP70	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$7
Building Total		17						$100		$63		$148	$311	$484

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$31
2	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$29
4	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
R1	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($53)
R2	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($18)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$131
2	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$153
4	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
R1	HP70	3	R	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$22
R2	HP70	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$7
Building Total		17						$100		$63		$148	$311	$484

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$129
2	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
3	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$151
4	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
R1	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$20
R2	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$7
Building Total		17						$110		$61		$148	$319	$476

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
2	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
3	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
4	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
5	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
6	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
7	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
8	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
9	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
10	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
11	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
12	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
13	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
14	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
15	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
16	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
17	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
18	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
19	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
20	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
21	I200	19	9-0	C	36	190	18	200	3.80	$488	$0	$269	I200	4	200	0.80	$2,835	I200	23	48	52	9,485	1,997	11,482	$3,592
22	I200	1	9-0	C	42	140	13	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
23	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
24	I200	1	9-0	C		150	14	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
25	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
26	I200	1	9-0	C		390	36	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
27	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
28	I200	7	9-0	C				200	1.40	$180	$0	$99	I200	2	200	0.40	$1,417	I200	9	48	52	3,494	998	4,493	$1,696
New Panel																	$1,500								$1,500
Building Total		52							10.40	$1,336	$0	$737		32		6.40	$24,178					25,958	15,974	41,933	$26,251

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
2	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
3	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
4	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
5	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
6	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
7	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
8	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
9	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
10	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
11	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
12	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
13	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
14	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
15	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
16	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
17	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
18	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
19	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
20	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
21	I200	23	C	190	18	200	4.60	$3,592	MH70	19		89	1.69	$10,868	48	52	11,482	4,221	7,261	($7,276)
22	I200	2	C	140	13	200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
23	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
24	I200	2	C	150	14	200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
25	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
26	I200	2	C	390	36	200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
27	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
28	I200	9	C			200	1.80	$1,696	MH70	7		89	0.62	$4,004	48	52	4,493	1,555	2,938	($2,308)
New Panel								$1,500												$1,500
Building Total		84					16.80	$26,251		52			4.63	$29,447			41,933	11,551	30,381	($3,196)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
2	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
3	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
4	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
5	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
6	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
7	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
8	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
9	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
10	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
11	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
12	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
13	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
14	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
15	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
16	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
17	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
18	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
19	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
20	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
21	I200	23	C	190	18	200	4.60	$3,592	HP70	19		99	1.88	$11,722	48	52	11,482	4,695	6,787	($8,129)
22	I200	2	C	140	13	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
23	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
24	I200	2	C	150	14	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
25	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
26	I200	2	C	390	36	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
27	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
28	I200	9	C			200	1.80	$1,696	HP70	7		99	0.69	$4,319	48	52	4,493	1,730	2,763	($2,622)
New Panel								$1,500												$1,500
Building Total		84					16.80	$26,251		52			5.15	$32,080			41,933	12,849	29,083	($5,829)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
2	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
3	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
4	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
5	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
6	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
7	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
8	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
9	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
10	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
11	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
12	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
13	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
14	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
15	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
16	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
17	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
18	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
19	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
20	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
21	I200	23	C	190	18	200	4.60	$3,592	MH70	19		89	1.69	$10,868	48	52	11,482	4,221	7,261	($7,276)
22	I200	2	C	140	13	200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
23	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
24	I200	2	C	150	14	200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
25	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
26	I200	2	C	390	36	200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
27	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
28	I200	9	C			200	1.80	$1,696	MH70	7		89	0.62	$4,004	48	52	4,493	1,555	2,938	($2,308)
New Panel								$1,500												$1,500
Building Total		84					16.80	$26,251		52			4.63	$29,447			41,933	11,551	30,381	($3,196)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
2	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
3	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
4	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
5	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
6	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
7	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
8	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
9	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
10	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
11	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
12	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
13	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
14	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
15	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
16	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
17	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
18	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
19	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
20	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
21	I200	23	C	190	18	200	4.60	$3,592	HP70	19		99	1.88	$11,722	48	52	11,482	4,695	6,787	($8,129)
22	I200	2	C	140	13	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
23	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
24	I200	2	C	150	14	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
25	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
26	I200	2	C	390	36	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
27	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
28	I200	9	C			200	1.80	$1,696	HP70	7		99	0.69	$4,319	48	52	4,493	1,730	2,763	($2,622)
New Panel								$1,500												$1,500
Building Total		84					16.80	$26,251		52			5.15	$32,080			41,933	12,849	29,083	($5,829)

VII-23

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
2	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
3	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
4	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
5	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
6	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
7	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
8	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
9	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
10	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
11	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
12	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
13	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
14	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
15	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
16	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
17	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
18	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
19	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
20	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
21	I200	23	C	190	18	200	4.60	$3,592	HP50	19		58	1.10	$11,463	48	52	11,482	2,751	8,731	($7,871)
22	I200	2	C	140	13	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
23	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
24	I200	2	C	150	14	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
25	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
26	I200	2	C	390	36	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
27	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
28	I200	9	C			200	1.80	$1,696	HP50	7		58	0.41	$4,223	48	52	4,493	1,013	3,479	($2,527)
New Panel								$1,500												$1,500
Building Total		84					16.80	$26,251		52			3.02	$31,372			41,933	7,528	34,405	($5,121)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	2	C	8	5	40	19.50	30%	30%	20%	0.140	1	3400	6800	0.86	20.58
2	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
3	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
4	I200	2	C	8	5	40	19.50	30%	30%	20%	0.140	1	3400	6800	0.86	20.58
5	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
6	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
7	I200	2	C	8	5	40	19.50	30%	30%	20%	0.140	1	3400	6800	0.86	20.58
8	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
9	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
10	I200	2	C	8	5	40	19.50	30%	30%	20%	0.140	1	3400	6800	0.86	20.58
11	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
12	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
13	I200	2	C	8	5	40	19.50	30%	30%	20%	0.140	1	3400	6800	0.86	20.58
14	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
15	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
16	I200	2	C	8	5	40	19.50	30%	30%	20%	0.140	1	3400	6800	0.86	20.58
17	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
18	I200	2	C	14	7	98	12.86	30%	30%	20%	0.140	1	3400	6800	0.86	8.40
19	I200	2	C	8	5	40	19.50	30%	30%	20%	0.140	1	3400	6800	0.86	20.58
20	I200	2	C	19	6.5	124	12.39	30%	30%	20%	0.140	1	3400	6800	0.86	6.66
21	I200	23	C	154	9	1386	7.06	30%	30%	20%	0.207	1	3400	78200	0.86	10.10
22	I200	2	C	9	7	63	15.24	30%	30%	20%	0.140	1	3400	6800	0.86	13.06
23	I200	2	C	9	7	63	15.24	30%	30%	20%	0.140	1	3400	6800	0.86	13.06
24	I200	2	C	9	7	63	15.24	30%	30%	20%	0.140	1	3400	6800	0.86	13.06
25	I200	2	C	9	7	63	15.24	30%	30%	20%	0.140	1	3400	6800	0.86	13.06
26	I200	2	C	9	7	63	15.24	30%	30%	20%	0.140	1	3400	6800	0.86	13.06
27	I200	2	C	9	7	63	15.24	30%	30%	20%	0.140	1	3400	6800	0.86	13.06
28	I200	9	C	164	8	1312	7.87	30%	30%	20%	0.186	1	3400	30600	0.86	3.75

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
2	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
3	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
4	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
5	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
6	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
7	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
8	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
9	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
10	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
11	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
12	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
13	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
14	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
15	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
16	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
17	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
18	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
19	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
20	MH70	1	C	19	6.5	124	12.39	30%	30%	20%	0.115	1	4000	4000	0.90	3.36
21	MH70	19	C	154	9	1386	7.06	30%	30%	20%	0.173	1	4000	76000	0.90	8.56
22	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
23	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
24	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
25	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
26	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
27	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
28	MH70	7	C	164	8	1312	7.87	30%	30%	20%	0.155	1	4000	28000	0.90	2.98

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
2	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
3	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
4	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
5	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
6	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
7	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
8	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
9	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
10	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
11	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
12	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
13	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
14	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
15	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
16	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
17	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
18	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
19	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
20	HP70	1	C	19	6.5	124	12.39	30%	30%	20%	0.178	1	5450	5450	0.94	7.39
21	HP70	19	C	154	9	1386	7.06	30%	30%	20%	0.270	1	5450	103550	0.94	18.98
22	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
23	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
24	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
25	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
26	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
27	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
28	HP70	7	C	164	8	1312	7.87	30%	30%	20%	0.242	1	5450	38150	0.94	6.62

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
2	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
3	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
4	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
5	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
6	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
7	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
8	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
9	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
10	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
11	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
12	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
13	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
14	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
15	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
16	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
17	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
18	MH70	1	C	14	7	98	12.86	30%	30%	20%	0.115	1	4000	4000	0.90	4.23
19	MH70	1	C	8	5	40	19.50	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
20	MH70	1	C	19	6.5	124	12.39	30%	30%	20%	0.115	1	4000	4000	0.90	3.36
21	MH70	19	C	154	9	1386	7.06	30%	30%	20%	0.173	1	4000	76000	0.90	8.56
22	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
23	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
24	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
25	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
26	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
27	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
28	MH70	7	C	164	8	1312	7.87	30%	30%	20%	0.155	1	4000	28000	0.90	2.98

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
2	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
3	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
4	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
5	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
6	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
7	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
8	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
9	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
10	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
11	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
12	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
13	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
14	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
15	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
16	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
17	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
18	HP70	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	5450	5450	0.94	9.31
19	HP70	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
20	HP70	1	C	19	6.5	124	12.39	30%	30%	20%	0.178	1	5450	5450	0.94	7.39
21	HP70	19	C	154	9	1386	7.06	30%	30%	20%	0.270	1	5450	103550	0.94	18.98
22	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
23	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
24	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
25	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
26	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
27	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
28	HP70	7	C	164	8	1312	7.87	30%	30%	20%	0.242	1	5450	38150	0.94	6.62

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	3600	3600	0.94	15.07
2	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
3	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
4	HP50	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	3600	3600	0.94	15.07
5	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
6	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
7	HP50	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	3600	3600	0.94	15.07
8	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
9	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
10	HP50	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	3600	3600	0.94	15.07
11	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
12	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
13	HP50	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	3600	3600	0.94	15.07
14	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
15	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
16	HP50	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	3600	3600	0.94	15.07
17	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
18	HP50	1	C	14	7	98	12.86	30%	30%	20%	0.178	1	3600	3600	0.94	6.15
19	HP50	1	C	8	5	40	19.50	30%	30%	20%	0.178	1	3600	3600	0.94	15.07
20	HP50	1	C	19	6.5	124	12.39	30%	30%	20%	0.178	1	3600	3600	0.94	4.88
21	HP50	19	C	154	9	1386	7.06	30%	30%	20%	0.270	1	3600	68400	0.94	12.54
22	HP50	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	3600	3600	0.94	9.57
23	HP50	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	3600	3600	0.94	9.57
24	HP50	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	3600	3600	0.94	9.57
25	HP50	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	3600	3600	0.94	9.57
26	HP50	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	3600	3600	0.94	9.57
27	HP50	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	3600	3600	0.94	9.57
28	HP50	7	C	164	8	1312	7.87	30%	30%	20%	0.242	1	3600	25200	0.94	4.37

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
2	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
3	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
4	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
5	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
6	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
7	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
8	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
9	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
10	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
11	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
12	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
13	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
14	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
15	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
16	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
17	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
18	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
19	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
20	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
21	I200	23	C	2496	1	700	82.0	$818	0.0	$0	7.7	$121	$938
22	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
23	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
24	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
25	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
26	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
27	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
28	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
Building Total		84						$2,986		$0		$440	$3,426

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
3	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
4	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
5	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
6	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
7	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
8	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
9	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
10	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
11	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
12	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
13	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
14	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
15	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
16	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
17	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
18	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
19	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
20	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
21	MH70	19	C	2496	1	5250	9.0	$586	0.4	$68	6.3	$166	$820	$118
22	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
23	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
24	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
25	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
26	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
27	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
28	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$65
Building Total		52						$1,603		$187		$453	$2,244	$1,182

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
3	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
4	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
5	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
6	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
7	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
8	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
9	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
10	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
11	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
12	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
13	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
14	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
15	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
16	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
17	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
18	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
19	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
20	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
21	HP70	19	C	2496	1	16800	2.8	$112	0.4	$71	6.3	$166	$348	$590
22	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
23	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
24	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
25	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
26	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
27	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
28	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$239
Building Total		52						$306		$193		$453	$953	$2,474

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
3	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
4	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
5	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
6	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
7	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
8	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
9	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
10	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
11	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
12	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
13	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
14	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
15	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
16	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
17	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
18	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
19	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
20	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
21	MH70	19	C	2496	1	5250	9.0	$586	0.4	$68	6.3	$166	$820	$118
22	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
23	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
24	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
25	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
26	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
27	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
28	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$65
Building Total		52						$1,603		$187		$453	$2,244	$1,182

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
3	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
4	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
5	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
6	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
7	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
8	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
9	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
10	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
11	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
12	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
13	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
14	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
15	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
16	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
17	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
18	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
19	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
20	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
21	HP70	19	C	2496	1	16800	2.8	$112	0.4	$71	6.3	$166	$348	$590
22	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
23	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
24	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
25	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
26	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
27	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
28	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$239
Building Total		52						$306		$193		$453	$953	$2,474

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-12
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
2	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
3	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
4	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
5	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
6	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
7	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
8	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
9	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
10	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
11	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
12	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
13	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
14	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
15	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
16	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
17	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
18	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
19	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
20	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
21	HP50	19	C	2496	1	16800	2.8	$123	0.4	$68	6.3	$166	$357	$581
22	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
23	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
24	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
25	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
26	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
27	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
28	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$236
Building Total		52						$336		$187		$453	$976	$2,450

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	4	9-0	C	38	250	23	132	0.53	$177	$18	$56	F312	0	132	0.00	$0	F312	4	48	52	1,318	0	1,318	$251
2	I200	2	6-6	C	33	200	19	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
3	I200	5	9-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
4	F312	10	9-0	C	36	360	33	132	1.32	$443	$45	$139	F312	0	132	0.00	$0	F312	10	48	52	3,295	0	3,295	$627
	F212	1	9-0	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
	I200	11	12-0	C				200	2.20	$283	$0	$156	I200	5	200	1.00	$3,544	I200	16	48	52	5,491	2,496	7,987	$3,982
	I200	7	8-0	C	36	270	25	200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
5	I200	7	9-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
	I200	9	7-0	B				200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
	F312	2	7-0	B	36	350	33	132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
6	I200	6	9-0	C				200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
	I200	6	7-0	B	36	450	42	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
7	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	4	7-0	B	36	450	42	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	I200	2	10-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
8	I200	3	10-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	2	7-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	3	7-0	B	36	285	26	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
9	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	4	7-0	B	36	410	38	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
10	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	4	7-0	B	36	465	43	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
11	I200	3	10-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	I200	4	7-0	B	36	580	54	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	1	7-0	B				132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
12	I200	6	9-0	C	36	260	24	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
	I200	2	7-0	B	48	240	22	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	2	8-0	C	36	730	68	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
13	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	3	7-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	1	7-0	B	36	860	80	132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
14	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	4	7-0	B	36	230	21	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
New Panel																	$1,500								$1,500
Page Total		136							25.86	$3,840	$85	$1,924		62		12.20	$45,402		198			64,542	30,441	94,983	$51,251

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
15	I200	4	10-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	4	7-0	B	36	125	12	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
16	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	2	7-0	B	36	320	30	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	1	7-0	B				132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
17	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	1	9-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
	I200	3	7-0	B	36	340	32	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
18	I200	2	10-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	2	7-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	I200	3	6-6	B	36	300	28	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
19	I200	2	10-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	2	7-3	C	36	475	44	132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	F212	2	7-0	C	34	440	41	82	0.16	$75	$7	$30	F212	0	82	0.00	$0	F212	2	48	52	409	0	409	$111
20	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	2	9-0	C	36	585	54	132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
21	I200	2	10-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	4	7-0	B				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	2	8-0	C	36	460	43	132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
22	I200	4	7-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	4	7-0	B	36	600	56	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
23	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F312	1	10-0	C	36	980	91	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
	I200	3	7-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
24	I200	2	7-6	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	1	8-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
	I200	3	7-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	1	7-0	B	36	800	74	132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
25	I200	3	7-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	1	10-6	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F212	1	8-0	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
26	I200	4	7-0	B	36	270	25	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	2	9-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	I200	1	10-6	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
Page Total		81							14.83	$2,395	$78	$1,146		38		7.46	$26,906		119			37,006	18,630	55,636	$30,525

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Existing Fixtures												Upgrade Fixtures					Baseline Total							
Room No.	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
27	I200	3	7-0	B	36	370	34	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	2	10-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	I200	2	10-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
28	I200	7	8-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F312	2	10-0	C	36	480	45	132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
29	I200	3	10-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	3	10-0	C				132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
	F212	1	10-0	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
30	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	4	9-0	C	36	640	59	132	0.53	$177	$18	$56	F312	0	132	0.00	$0	F312	4	48	52	1,318	0	1,318	$251
31	I200	2	7-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	2	10-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	1	8-0	C	36	350	33	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
32	F312	3	7-0	B	36	750	70	132	0.40	$133	$14	$42	F312	2	132	0.26	$1,393	F312	5	48	52	988	659	1,647	$1,581
	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	I200	2	10-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
33	I200	5	7-0	B				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	F312	1	7-0	B	36	500	46	132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
	F312	3	9-0	C				132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
34	F312	2	7-0	B				132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
	I200	7	8-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
35	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	3	9-0	C				132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
36	I200	12	6-6	B	32	350	33	200	2.40	$308	$0	$170	I200	5	200	1.00	$3,544	I200	17	48	52	5,990	2,496	8,486	$4,022
	I200	14	9-0	C	36	400	37	200	2.80	$360	$0	$198	I200	6	200	1.20	$4,252	I200	20	48	52	6,989	2,995	9,984	$4,810
	F312	1	9-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
37	F312	3	7-0	C	69	440	41	132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
	I200	7	7-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
38	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
39	I200	5	9-0	C	36	960	89	200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
40	I200	5	10-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
41	I200	2	6-6	C	33	200	19	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
Page Total		121							22.18	$3,641	$130	$1,709		50		9.73	$35,386		171			55,356	24,281	79,637	$40,865

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Existing Fixtures											Upgrade Fixtures					Baseline Total							
Room No.	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
42	I200	3	10-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	2	6-6	C	36	240	22	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
43	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
RN	I200	3	6-6	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
	I200	2	8-0	L				200	0.40	$51	$0	$28	I200	0	200	0.00	$0	I200	2	48	52	998	0	998	$80
RW	I200	4	8-0	L				200	0.80	$103	$0	$57	I200	0	200	0.00	$0	I200	4	48	52	1,997	0	1,997	$159
	MV10	4	8-0	L				127	0.51	$216	$28	$41	MV10	0	127	0.00	$0	MV10	4	48	52	1,268	0	1,268	$285
	MV10	24	8-0	R				127	3.05	$1,295	$166	$247	MV10	0	127	0.00	$0	MV10	24	48	52	7,608	0	7,608	$1,708
RE	I200	7	8-0	L				200	1.40	$180	$0	$99	I200	0	200	0.00	$0	I200	7	48	52	3,494	0	3,494	$279
	I200	20	8-0	R				200	4.00	$514	$0	$283	I200	0	200	0.00	$0	I200	20	48	52	9,984	0	9,984	$797
RS	I200	3	9-0	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
Page Total		74							12.76	$2,693	$193	$940		4		0.80	$2,835		78			31,839	1,997	33,836	$6,661
Building Total		##							75.62	######	$486	$5,719		154		30.19	$110,529		566			188,743	75,349	264,092	$129,302

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	4	C	250	23	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
2	I200	3	C	200	19	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
4	F312	10	C	360	33	132	1.32	$627	F208	10		62	0.62	$6,964	48	52	3,295	1,548	1,747	($6,336)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	I200	10	C	270	25	200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
5	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	13	B			200	2.60	$3,194	F208	11		62	0.68	$7,660	48	52	6,490	1,702	4,787	($4,466)
	F312	3	B	350	33	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
6	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
	I200	9	B	450	42	200	1.80	$2,365	F208	7		62	0.43	$4,874	48	52	4,493	1,083	3,410	($2,509)
7	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B	450	42	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
8	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	B	285	26	200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
9	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B	410	38	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
10	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B	465	43	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
11	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	6	B	580	54	200	1.20	$1,577	F208	3		62	0.19	$2,089	48	52	2,995	464	2,531	($512)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
12	I200	9	C	260	24	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
	I200	3	B	240	22	200	0.60	$788	F208	4		62	0.19	$2,089	48	52	1,498	464	1,033	($1,301)
	I200	3	C	730	68	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
13	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B	860	80	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
14	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	6	B	230	21	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
New Panel								$1,500												$1,500
Page Total		198					38.05	$51,251		139			10.62	$86,019			94,983	26,498	68,485	($34,768)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	6	B	125	12	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
16	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	3	B	320	30	200	0.60	$788	F208	2		62	0.12	$1,393	48	52	1,498	310	1,188	($604)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
17	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	5	B	340	32	200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
18	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	5	B	300	28	200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
19	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	2	C	475	44	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	2	C	440	41	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
20	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	2	C	585	54	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
21	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	2	C	460	43	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
22	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	6	B	600	56	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
23	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	F312	1	C	980	91	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
24	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B	800	74	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
25	I200	5	B			200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
26	I200	6	B	270	25	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
Page Total		119					22.29	$30,525		84			6.02	$54,126			55,636	15,021	40,615	($23,601)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
27	I200	5	B	370	34	200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
28	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	F312	2	C	480	45	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
29	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
30	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	4	C	640	59	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
31	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	1	C	350	33	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
32	F312	5	B	750	70	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
33	I200	7	B			200	1.40	$1,617	F208	6		62	0.37	$4,178	48	52	3,494	929	2,566	($2,561)
	F312	2	B	500	46	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
34	F312	3	B			132	0.40	$822	F208	4		62	0.25	$2,785	48	52	988	619	369	($1,964)
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
35	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
36	I200	17	B	350	33	200	3.40	$4,022	F208	12		62	0.87	$9,749	48	52	8,486	2,167	6,320	($5,727)
	I200	20	C	400	37	200	4.00	$4,810	MH70	14		89	1.25	$7,711	48	52	9,984	3,110	6,874	($2,900)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
37	F312	3	C	440	41	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
38	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
39	I200	7	C	960	89	200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
40	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
41	I200	3	C	200	19	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
Page Total		171					31.91	$40,865		127			9.82	$77,954			79,637	24,506	55,132	($37,089)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
42	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	3	C	240	22	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
43	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
RN	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
	I200	2	L			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
RW	I200	4	L			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
	MV10	4	L			127	0.51	$285	MH70	4		89	0.36	$2,203	48	52	1,268	889	379	($1,918)
	MV10	24	R			127	3.05	$1,708	MH70	24		89	2.14	$13,218	48	52	7,608	5,331	2,276	($11,511)
RE	I200	7	L			200	1.40	$279	MH70	7		89	0.62	$3,855	48	52	3,494	1,555	1,939	($3,576)
	I200	20	R			200	4.00	$797	MH70	20		89	1.78	$11,015	48	52	9,984	4,443	5,541	($10,218)
RS	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
Page Total		78					13.56	$6,661		74			6.59	$40,756			33,836	16,439	17,397	($34,096)
Building Tota		##					105.81	$129,302		424			33.04	$258,855			264,092	82,463	181,629	($129,553)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	4	C	250	23	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
2	I200	3	C	200	19	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
4	F312	10	C	360	33	132	1.32	$627	F208	10		62	0.62	$6,964	48	52	3,295	1,548	1,747	($6,336)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	I200	10	C	270	25	200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
5	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	13	B			200	2.60	$3,194	F208	11		62	0.68	$7,660	48	52	6,490	1,702	4,787	($4,466)
	F312	3	B	350	33	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
6	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
	I200	9	B	450	42	200	1.80	$2,365	F208	7		62	0.43	$4,874	48	52	4,493	1,083	3,410	($2,509)
7	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B	450	42	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
8	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B	285	26	200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
9	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B	410	38	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
10	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B	465	43	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
11	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	6	B	580	54	200	1.20	$1,577	F208	3		62	0.19	$2,089	48	52	2,995	464	2,531	($512)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
12	I200	9	C	260	24	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
	I200	3	B	240	22	200	0.60	$788	F208	3		62	0.19	$2,089	48	52	1,498	464	1,033	($1,301)
	I200	3	C	730	68	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
13	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B	860	80	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
14	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	6	B	230	21	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
New Panel								$1,500												$1,500
Page Total		198					38.05	$51,251		139			11.36	$90,916			94,983	28,345	66,638	($39,665)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	6	B	125	12	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
16	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	3	B	320	30	200	0.60	$788	F208	2		62	0.12	$1,393	48	52	1,498	310	1,188	($604)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
17	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	5	B	340	32	200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
18	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	5	B	300	28	200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
19	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C	475	44	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	2	C	440	41	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
20	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C	585	54	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
21	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	2	C	460	43	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
22	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	6	B	600	56	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
23	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F312	1	C	980	91	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
24	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B	800	74	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
25	I200	5	B			200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
26	I200	6	B	270	25	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
Page Total		119					22.29	$30,525		84			6.32	$56,111			55,636	15,770	39,866	($25,586)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
27	I200	5	B	370	34	200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
28	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F312	2	C	480	45	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
29	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
30	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	4	C	640	59	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
31	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C	350	33	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
32	F312	5	B	750	70	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
33	I200	7	B			200	1.40	$1,617	F208	6		62	0.37	$4,178	48	52	3,494	929	2,566	($2,561)
	F312	2	B	500	46	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
34	F312	3	B			132	0.40	$822	F208	4		62	0.25	$2,785	48	52	988	619	369	($1,964)
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
35	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
36	I200	17	B	350	33	200	3.40	$4,022	F208	14		62	0.87	$9,749	48	52	8,486	2,167	6,320	($5,727)
	I200	20	C	400	37	200	4.00	$4,810	HP70	14		99	1.39	$8,637	48	52	9,984	3,459	6,525	($3,827)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
37	F312	3	C	440	41	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
38	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
39	I200	7	C	960	89	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
40	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
41	I200	3	C	200	19	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
Page Total		171					31.91	$40,865		127			10.54	$82,718			79,637	26,303	53,335	($41,853)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
42	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	3	C	240	22	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
43	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
RN	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
	I200	2	L			200	0.40	$80	HP70	2		99	0.20	$1,234	48	52	998	494	504	($1,154)
RW	I200	4	L			200	0.80	$159	HP70	4		99	0.40	$2,468	48	52	1,997	988	1,008	($2,308)
	MV10	4	L			127	0.51	$285	HP70	4		99	0.40	$2,468	48	52	1,268	988	280	($2,183)
	MV10	24	R			127	3.05	$1,708	HP50	24		58	1.39	$14,479	48	52	7,608	3,474	4,133	($12,772)
RE	I200	7	L			200	1.40	$279	HP70	7		99	0.69	$4,319	48	52	3,494	1,730	1,765	($4,039)
	I200	20	R			200	4.00	$797	HP50	20		58	1.16	$12,066	48	52	9,984	2,895	7,089	($11,269)
RS	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Page Total		78					13.56	$6,661		74			5.28	$44,972			33,836	13,169	20,667	($38,311)
Building Total		##					105.81	$129,302		424			33.49	$274,716			264,092	83,586	180,506	($145,415)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	4	C	250	23	132	0.53	$251	F312	0		132	0.53	$251	48	52	1,318	1,318	0	$0
2	I200	3	C	200	19	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
4	F312	10	C	360	33	132	1.32	$627	F312	0		132	1.32	$627	48	52	3,295	3,295	0	$0
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	I200	10	C	270	25	200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
5	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	13	B			200	2.60	$3,194	F312	11		132	1.45	$7,660	48	52	6,490	3,624	2,865	($4,466)
	F312	3	B	350	33	132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
6	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
	I200	9	B	450	42	200	1.80	$2,365	F312	7		132	0.92	$4,874	48	52	4,493	2,306	2,186	($2,509)
7	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B	450	42	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
8	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	B	285	26	200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
9	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B	410	38	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
10	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B	465	43	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
11	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	6	B	580	54	200	1.20	$1,577	F312	5		132	0.40	$2,089	48	52	2,995	988	2,007	($512)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
12	I200	9	C	260	24	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
	I200	3	B	240	22	200	0.60	$788	F312	3		132	0.40	$2,089	48	52	1,498	988	509	($1,301)
	I200	3	C	730	68	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
13	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	B	860	80	132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
14	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	6	B	230	21	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
New Panel								$1,500												$1,500
Page Total		198					38.05	$51,251		124			15.12	$76,507			94,983	37,730	57,253	($25,256)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	6	B	125	12	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
16	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	3	B	320	30	200	0.60	$788	F312	2		132	0.26	$1,393	48	52	1,498	659	839	($604)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
17	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	I200	5	B	340	32	200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
18	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	5	B	300	28	200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
19	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	2	C	475	44	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	F212	2	C	440	41	82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
20	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	2	C	585	54	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
21	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B			200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	F312	2	C	460	43	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
22	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	6	B	600	56	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
23	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	F312	1	C	980	91	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
24	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	B	800	74	132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
25	I200	5	B			200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
26	I200	6	B	270	25	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
Page Total		119					22.29	$30,525		68			9.65	$43,967			55,636	24,081	31,554	($13,441)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
27	I200	5	B	370	34	200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
28	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	F312	2	C	480	45	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
29	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
30	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	4	C	640	59	132	0.53	$251	F312	0		132	0.53	$251	48	52	1,318	1,318	0	$0
31	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	1	C	350	33	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
32	F312	5	B	750	70	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
33	I200	7	B			200	1.40	$1,617	F312	6		132	0.79	$4,178	48	52	3,494	1,977	1,518	($2,561)
	F312	2	B	500	46	132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
34	F312	3	B			132	0.40	$822	F312	4		132	0.53	$2,785	48	52	988	1,318	(329)	($1,964)
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
35	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
36	I200	17	B	350	33	200	3.40	$4,022	F312	14		132	1.85	$9,749	48	52	8,486	4,613	3,874	($5,727)
	I200	20	C	400	37	200	4.00	$4,810	MH70	14		89	1.25	$7,711	48	52	9,984	3,110	6,874	($2,900)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
37	F312	3	C	440	41	132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
38	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
39	I200	7	C	960	89	200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
40	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
41	I200	3	C	200	19	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
Page Total		171					31.91	$40,865		104			13.62	$63,373			79,637	33,991	45,647	($22,509)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
42	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	3	C	240	22	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
43	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
RN	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
	I200	2	L			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
RW	I200	4	L			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
	MV10	4	L			127	0.51	$285	MH70	4		89	0.36	$2,203	48	52	1,268	889	379	($1,918)
	MV10	24	R			127	3.05	$1,708	MH70	24		89	2.14	$13,218	48	52	7,608	5,331	2,276	($11,511)
RE	I200	7	L			200	1.40	$279	MH70	7		89	0.62	$3,855	48	52	3,494	1,555	1,939	($3,576)
	I200	20	R			200	4.00	$797	MH70	20		89	1.78	$11,015	48	52	9,984	4,443	5,541	($10,218)
RS	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
Page Total		78					13.56	$6,661		74			6.59	$40,756			33,836	16,439	17,397	($34,096)
Building Total		##					105.81	$129,302		370			44.97	$224,604			264,092	112,240	151,852	($95,302)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	4	C	250	23	132	0.53	$251	F312	0		132	0.53	$251	48	52	1,318	1,318	0	$0
2	I200	3	C	200	19	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
4	F312	10	C	360	33	132	1.32	$627	F312	0		132	1.32	$627	48	52	3,295	3,295	0	$0
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	I200	10	C	270	25	200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
5	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	13	B			200	2.60	$3,194	F312	11		132	1.45	$7,660	48	52	6,490	3,624	2,865	($4,466)
	F312	3	B	350	33	132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
6	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
	I200	9	B	450	42	200	1.80	$2,365	F312	7		132	0.92	$4,874	48	52	4,493	2,306	2,186	($2,509)
7	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B	450	42	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
8	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B	285	26	200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
9	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B	410	38	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
10	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B	465	43	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
11	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	6	B	580	54	200	1.20	$1,577	F312	3		132	0.40	$2,089	48	52	2,995	988	2,007	($512)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
12	I200	9	C	260	24	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
	I200	3	B	240	22	200	0.60	$788	F312	3		132	0.40	$2,089	48	52	1,498	988	509	($1,301)
	I200	3	C	730	68	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
13	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	B	860	80	132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
14	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	6	B	230	21	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
New Panel								$1,500												$1,500
Page Total		198					38.05	$51,251		124			15.86	$81,404			94,983	39,577	55,406	($30,153)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	6	B	125	12	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
16	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	3	B	320	30	200	0.60	$788	F312	2		132	0.26	$1,393	48	52	1,498	659	839	($604)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
17	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	I200	5	B	340	32	200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
18	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	5	B	300	28	200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
19	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C	475	44	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	F212	2	C	440	41	82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
20	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C	585	54	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
21	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B			200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	F312	2	C	460	43	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
22	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	6	B	600	56	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
23	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F312	1	C	980	91	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
24	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	B	800	74	132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
25	I200	5	B			200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
26	I200	6	B	270	25	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
Page Total		119					22.29	$30,525		68			9.95	$45,952			55,636	24,830	30,806	($15,426)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
27	I200	5	B	370	34	200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
28	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F312	2	C	480	45	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
29	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
30	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	4	C	640	59	132	0.53	$251	F312	0		132	0.53	$251	48	52	1,318	1,318	0	$0
31	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C	350	33	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
32	F312	5	B	750	70	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
33	I200	7	B			200	1.40	$1,617	F312	6		132	0.79	$4,178	48	52	3,494	1,977	1,518	($2,561)
	F312	2	B	500	46	132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
34	F312	3	B			132	0.40	$822	F312	4		132	0.53	$2,785	48	52	988	1,318	(329)	($1,964)
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
35	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
36	I200	17	B	350	33	200	3.40	$4,022	F312	14		132	1.85	$9,749	48	52	8,486	4,613	3,874	($5,727)
	I200	20	C	400	37	200	4.00	$4,810	HP70	14		99	1.39	$8,637	48	52	9,984	3,459	6,525	($3,827)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
37	F312	3	C	440	41	132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
38	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
39	I200	7	C	960	89	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
40	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
41	I200	3	C	200	19	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
Page Total		171					31.91	$40,865		104			14.34	$68,138			79,637	35,788	43,850	($27,273)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
42	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	3	C	240	22	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
43	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
RN	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
	I200	2	L			200	0.40	$80	HP70	2		99	0.20	$1,234	48	52	998	494	504	($1,154)
RW	I200	4	L			200	0.80	$159	HP70	4		99	0.40	$2,468	48	52	1,997	988	1,008	($2,308)
	MV10	4	L			127	0.51	$285	HP70	4		99	0.40	$2,468	48	52	1,268	988	280	($2,183)
	MV10	24	R			127	3.05	$1,708	HP50	24		58	1.39	$14,479	48	52	7,608	3,474	4,133	($12,772)
RE	I200	7	L			200	1.40	$279	HP70	7		99	0.69	$4,319	48	52	3,494	1,730	1,765	($4,039)
	I200	20	R			200	4.00	$797	HP50	20		58	1.16	$12,066	48	52	9,984	2,895	7,089	($11,269)
RS	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Page Total		78					13.56	$6,661		74			5.28	$44,972			33,836	13,169	20,667	($38,311)
Building Tota		##					105.81	$129,302		370			45.42	$240,465			264,092	113,363	150,728	($111,163)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	4	C	250	23	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
2	I200	3	C	200	19	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
3	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
4	F312	10	C	360	33	132	1.32	$627	F208	10		62	0.62	$6,964	48	52	3,295	1,548	1,747	($6,336)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	I200	16	C			200	3.20	$3,982	HP50	11		58	0.64	$6,636	48	52	7,987	1,592	6,395	($2,654)
	I200	10	C	270	25	200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
5	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
	I200	13	B			200	2.60	$3,194	F208	11		62	0.68	$7,660	48	52	6,490	1,702	4,787	($4,466)
	F312	3	B	350	33	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
6	I200	9	C			200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
	I200	9	B	450	42	200	1.80	$2,365	F208	7		62	0.43	$4,874	48	52	4,493	1,083	3,410	($2,509)
7	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	6	B	450	42	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
8	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	5	B	285	26	200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
9	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	6	B	410	38	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
10	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	6	B	465	43	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
11	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	I200	6	B	580	54	200	1.20	$1,577	F208	3		62	0.19	$2,089	48	52	2,995	464	2,531	($512)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
12	I200	9	C	260	24	200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
	I200	3	B	240	22	200	0.60	$788	F208	3		62	0.19	$2,089	48	52	1,498	464	1,033	($1,301)
	I200	3	C	730	68	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
13	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B	860	80	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
14	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	6	B	230	21	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
New Panel								$1,500												$1,500
Page Total		198					38.05	$51,251		139			8.32	$89,908			94,983	20,772	74,211	($38,657)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	6	B	125	12	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
16	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	3	B	320	30	200	0.60	$788	F208	2		62	0.12	$1,393	48	52	1,498	310	1,188	($604)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
17	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	5	B	340	32	200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
18	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	5	B	300	28	200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
19	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	2	C	475	44	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	2	C	440	41	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
20	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	2	C	585	54	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
21	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	2	C	460	43	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
22	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	6	B	600	56	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
23	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	F312	1	C	980	91	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
24	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B	800	74	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
25	I200	5	B			200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
26	I200	6	B	270	25	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
Page Total		119					22.29	$30,525		84			5.09	$55,702			55,636	12,700	42,936	($25,177)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
27	I200	5	B	370	34	200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
28	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	F312	2	C	480	45	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
29	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
30	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F312	4	C	640	59	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
31	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	1	C	350	33	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
32	F312	5	B	750	70	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
33	I200	7	B			200	1.40	$1,617	F208	6		62	0.37	$4,178	48	52	3,494	929	2,566	($2,561)
	F312	2	B	500	46	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
34	F312	3	B			132	0.40	$822	F208	4		62	0.25	$2,785	48	52	988	619	369	($1,964)
	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
35	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
36	I200	17	B	350	33	200	3.40	$4,022	F208	14		62	0.87	$9,749	48	52	8,486	2,167	6,320	($5,727)
	I200	20	C	400	37	200	4.00	$4,810	HP50	14		58	0.81	$8,446	48	52	9,984	2,027	7,957	($3,636)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
37	F312	3	C	440	41	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
38	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
39	I200	7	C	960	89	200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
40	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
41	I200	3	C	200	19	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
Page Total		171					31.91	$40,865		127			7.59	$81,738			79,637	18,935	60,703	($40,873)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
42	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	I200	3	C	240	22	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
43	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
RN	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
	I200	2	L			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
RW	I200	4	L			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
	MV10	4	L			127	0.51	$285	HP50	4		58	0.23	$2,413	48	52	1,268	579	689	($2,129)
	MV10	24	R			127	3.05	$1,708	HP50	24		58	1.39	$14,479	48	52	7,608	3,474	4,133	($12,772)
RE	I200	7	L			200	1.40	$279	HP50	7		58	0.41	$4,223	48	52	3,494	1,013	2,481	($3,944)
	I200	20	R			200	4.00	$797	HP50	20		58	1.16	$12,066	48	52	9,984	2,895	7,089	($11,269)
RS	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Page Total		78					13.56	$6,661		74			4.29	$44,645			33,836	10,713	23,123	($37,984)
Building Tota		##					105.81	$129,302		424			25.29	$271,992			264,092	63,119	200,973	($142,691)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	3	C	25	14	350	6.69	30%	30%	20%	0.217	1	3400	10200	0.86	5.47
	F312	4	C	25	14	350	6.69	30%	30%	20%						
2	I200	3	C	25	8	200	9.90	30%	30%	20%	0.142	1	3400	10200	0.86	6.26
3	I200	7	C	25	15	375	6.40	30%	30%	20%	0.225	1	3400	23800	0.86	12.35
4	F312	10	C	89	24	2136	3.17	30%	30%	20%						
	F212	1	C	89	24	2136	3.17	30%	30%	20%						
	I200	16	C	89	24	2136	3.17	30%	30%	20%	0.352	1	3400	54400	0.86	7.75
	I200	10	C	89	24	2136	3.17	30%	30%	20%	0.352	1	3400	34000	0.86	4.84
5	I200	10	C	54	24	1296	3.61	30%	30%	20%	0.329	1	3400	34000	0.86	7.46
	I200	13	B	54	24	1296	1.50	30%	10%	20%	0.443	1	3400	44200	0.86	13.06
	F312	3	B	54	24	1296	1.50	30%	10%	20%	0.549	3	2570	23130	0.92	9.03
6	I200	9	C	29	24	696	4.57	30%	30%	20%	0.284	1	3400	30600	0.86	10.79
	I200	9	B	29	24	696	1.90	30%	10%	20%	0.402	1	3400	30600	0.86	15.28
7	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
	I200	6	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	20400	0.86	14.23
	I200	2	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	6800	0.86	3.17
	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
8	I200	5	C	24	14	336	6.79	30%	30%	20%	0.214	1	3400	17000	0.86	9.36
	I200	3	C	24	14	336	6.79	30%	30%	20%	0.214	1	3400	10200	0.86	5.62
	I200	5	B	24	14	336	2.83	30%	10%	20%	0.336	1	3400	17000	0.86	14.70
9	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
	I200	6	B	24	19	456	2.36	30%	10%	20%	0.386	1	3400	20400	0.86	14.93
10	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
	I200	6	B	24	19	456	2.36	30%	10%	20%	0.386	1	3400	20400	0.86	14.93
11	I200	5	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	17000	0.86	7.93
	I200	2	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	6800	0.86	3.17
	I200	6	B	24	19	456	2.36	30%	10%	20%	0.386	1	3400	20400	0.86	14.93
	F312	2	B	24	19	456	2.36	30%	10%	20%	0.386	3	2570	15420	0.92	12.03
12	I200	9	C	24	13	312	7.12	30%	30%	20%	0.205	1	3400	30600	0.86	17.38
	I200	3	B	24	13	312	2.96	30%	10%	20%	0.327	1	3400	10200	0.86	9.24
	I200	3	C	24	13	312	7.12	30%	30%	20%	0.205	1	3400	10200	0.86	5.79
13	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
	I200	5	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	17000	0.86	11.86
	F312	2	B	24	19	456	2.36	30%	10%	20%	0.368	3	2570	15420	0.92	11.47
14	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
	I200	6	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	20400	0.86	14.23

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
	I200	6	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	20400	0.86	14.23
16	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
	I200	3	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	10200	0.86	7.12
	F312	2	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	15420	0.92	15.21
17	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
	F312	1	C	24	19	456	5.66	30%	30%	20%						
	I200	5	B	24	19	456	2.36	30%	10%	20%	0.668	1	3400	17000	0.86	21.53
18	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
	F312	2	C	24	19	456	5.66	30%	30%	20%						
	I200	5	B	24	19	456	2.36	30%	10%	20%	0.668	1	3400	17000	0.86	21.53
19	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
	F312	2	C	24	19	456	5.66	30%	30%	20%						
	F212	2	C	24	19	456	5.66	30%	30%	20%						
20	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
	F312	2	C	24	19	456	5.66	30%	30%	20%						
21	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
	I200	6	B	24	19	456	2.36	30%	10%	20%	0.668	1	3400	20400	0.86	25.83
	F312	2	C	24	19	456	5.66	30%	30%	20%						
22	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
	I200	6	B	24	19	456	2.36	30%	10%	20%	0.668	1	3400	20400	0.86	25.83
23	I200	2	C	24	14	336	6.79	30%	30%	20%	0.214	1	3400	6800	0.86	3.74
	F312	1	C	24	14	336	6.79	30%	30%	20%						
	I200	5	B	24	14	336	2.83	30%	10%	20%	0.336	1	3400	17000	0.86	14.70
24	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
	F312	1	C	24	19	456	5.66	30%	30%	20%						
	I200	5	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	17000	0.86	11.86
	F312	2	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	15420	0.92	15.21
25	I200	5	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	17000	0.86	11.86
	I200	2	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	6800	0.86	3.17
	F212	1	C	24	19	456	5.66	30%	30%	20%						
26	I200	6	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	20400	0.86	14.23
	F312	2	C	24	19	456	5.66	30%	30%	20%						
	I200	2	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	6800	0.86	3.17
	I200	2	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	6800	0.86	3.17

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
27	I200	5	B	24	14	336	2.83	30%	10%	20%	0.336	1	3400	17000	0.86	14.70
	F312	2	C	24	14	336	6.79	30%	30%	20%						
	I200	3	C	24	14	336	6.79	30%	30%	20%	0.214	1	3400	10200	0.86	5.62
	I200	2	C	24	14	336	6.79	30%	30%	20%	0.214	1	3400	6800	0.86	3.74
28	I200	10	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	34000	0.86	15.86
	I200	2	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	6800	0.86	3.17
	F312	2	C	24	19	456	5.66	30%	30%	20%						
29	I200	5	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	17000	0.86	7.93
	F312	3	C	24	19	456	5.66	30%	30%	20%						
	F212	1	C	24	19	456	5.66	30%	30%	20%						
30	I200	5	C	19	19	361	6.32	30%	30%	20%	0.227	1	3400	17000	0.86	9.24
	F312	4	C	19	19	361	6.32	30%	30%	20%						
31	I200	3	C	24	14	336	6.79	30%	30%	20%	0.214	1	3400	10200	0.86	5.62
	I200	3	C	24	14	336	6.79	30%	30%	20%	0.214	1	3400	10200	0.86	5.62
	F312	1	C	24	14	336	6.79	30%	30%	20%						
32	F312	5	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	38550	0.92	38.02
	I200	2	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	6800	0.86	3.17
	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
33	I200	7	B	29	24	696	1.90	30%	10%	20%	0.402	1	3400	23800	0.86	11.88
	F312	2	B	29	24	696	1.90	30%	10%	20%	0.402	3	2570	15420	0.92	8.21
	F312	3	C	29	24	696	4.57	30%	30%	20%						
	I200	2	C	29	24	696	4.57	30%	30%	20%	0.284	1	3400	6800	0.86	2.40
34	F312	3	B	24	18	432	2.43	30%	10%	20%	0.483	3	2570	23130	0.92	23.83
	I200	10	C	24	18	432	5.83	30%	30%	20%	0.241	1	3400	34000	0.86	16.40
	I200	2	C	24	18	432	5.83	30%	30%	20%	0.241	1	3400	6800	0.86	3.28
35	I200	6	C	24	15	360	6.50	30%	30%	20%	0.222	1	3400	20400	0.86	10.88
	F312	3	C	24	15	360	6.50	30%	30%	20%						
36	I200	17	B	59	19	1121	1.74	30%	10%	20%	0.419	1	3400	57800	0.86	18.68
	I200	20	C	59	19	1121	4.17	30%	30%	20%	0.301	1	3400	68000	0.86	15.78
	F312	1	C	59	19	1121	4.17	30%	30%	20%						
37	F312	3	C	29	23	667	4.68	30%	30%	20%						
	I200	10	C	29	23	667	4.68	30%	30%	20%	0.279	1	3400	34000	0.86	12.29
	I200	2	C	29	23	667	4.68	30%	30%	20%	0.279	1	3400	6800	0.86	2.46
38	I200	2	C	10	5	50	18.00	30%	30%	20%	0.140	1	3400	6800	0.86	16.46
39	I200	7	C	21	19	399	6.02	30%	30%	20%	0.235	1	3400	23800	0.86	12.12
40	I200	7	C	23	15	345	6.61	30%	30%	20%	0.219	1	3400	23800	0.86	13.06
41	I200	3	C	23	8	184	10.11	30%	30%	20%	0.140	1	3400	10200	0.86	6.71

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
42	I200	5	C	23	14	322	6.89	30%	30%	20%	0.211	1	3400	17000	0.86	9.63
	I200	3	C	23	14	322	6.89	30%	30%	20%	0.211	1	3400	10200	0.86	5.78
43	I200	3	C	11	7	77	14.03	30%	30%	20%	0.140	1	3400	10200	0.86	16.03
RN	I200	3	R	50	8	400	3.63	30%	30%	20%	0.328	1	3400	10200	0.86	7.23
	I200	2	L	50	8	400	3.63	30%	30%	20%	0.328	1	3400	6800	0.86	4.82
RW	I200	4	L	459	8	3672	3.18	30%	30%	20%	0.351	1	3400	13600	0.86	1.12
	MV10	4	L	459	8	3672	3.18	30%	30%	20%	0.308	1	2800	11200	0.81	0.76
	MV10	24	R	459	8	3672	3.18	30%	30%	20%	0.308	1	2800	67200	0.81	4.54
RE	I200	7	L	459	8	3672	3.18	30%	30%	20%	0.351	1	3400	23800	0.86	1.97
	I200	20	R	459	8	3672	3.18	30%	30%	20%	0.351	1	3400	68000	0.86	5.62
RS	I200	3	R	50	8	400	3.63	30%	30%	20%	0.328	1	3400	10200	0.86	7.23

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	2	C	25	14	350	6.69	30%	30%	20%	0.182	1	4000	8000	0.90	3.75
	F208	4	C	25	14	350	6.69	30%	30%	20%						
2	MH70	2	C	25	8	200	9.90	30%	30%	20%	0.117	1	4000	8000	0.90	4.22
3	MH70	5	C	25	15	375	6.40	30%	30%	20%	0.189	1	4000	20000	0.90	9.09
4	F208	10	C	89	24	2136	3.17	30%	30%	20%						
	F208	1	C	89	24	2136	3.17	30%	30%	20%						
	MH70	11	C	89	24	2136	3.17	30%	30%	20%	0.308	1	4000	44000	0.90	5.72
	MH70	7	C	89	24	2136	3.17	30%	30%	20%	0.308	1	4000	28000	0.90	3.64
5	MH70	7	C	54	24	1296	3.61	30%	30%	20%	0.286	1	4000	28000	0.90	5.57
	F208	11	B	54	24	1296	1.50	30%	10%	20%	0.620	2	2650	58300	0.92	25.70
	F208	2	B	54	24	1296	1.50	30%	10%	20%	0.620	2	2650	10600	0.92	4.67
6	MH70	6	C	29	24	696	4.57	30%	30%	20%	0.244	1	4000	24000	0.90	7.59
	F208	7	B	29	24	696	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	28.89
7	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
8	MH70	3	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	12000	0.90	5.77
	MH70	2	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	8000	0.90	3.84
	F208	3	B	24	14	336	2.83	30%	10%	20%	0.530	2	2650	15900	0.92	23.11
9	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
10	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
11	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
12	MH70	6	C	24	13	312	7.12	30%	30%	20%	0.205	1	4000	24000	0.90	14.23
	F208	3	B	24	13	312	2.96	30%	10%	20%	0.522	2	2650	15900	0.92	24.52
	MH70	2	C	24	13	312	7.12	30%	30%	20%	0.205	1	4000	8000	0.90	4.74
13	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
14	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
16	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F208	2	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	10600	0.92	11.95
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
17	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F208	1	C	24	19	456	5.66	30%	30%	20%						
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
18	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F208	2	C	24	19	456	5.66	30%	30%	20%						
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
19	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F208	2	C	24	19	456	5.66	30%	30%	20%						
	F208	2	C	24	19	456	5.66	30%	30%	20%						
20	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F208	2	C	24	19	456	5.66	30%	30%	20%						
21	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	F208	2	C	24	19	456	5.66	30%	30%	20%						
22	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
23	MH70	1	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	4000	0.90	1.92
	F208	1	C	24	14	336	6.79	30%	30%	20%						
	F208	3	B	24	14	336	2.83	30%	10%	20%	0.530	2	2650	15900	0.92	23.11
24	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F208	1	C	24	19	456	5.66	30%	30%	20%						
	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
25	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	F208	1	C	24	19	456	5.66	30%	30%	20%						
26	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	F208	2	C	24	19	456	5.66	30%	30%	20%						
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
27	F208	3	B	24	14	336	2.83	30%	10%	20%	0.530	2	2650	15900	0.92	23.11
	F208	2	C	24	14	336	6.79	30%	30%	20%						
	MH70	2	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	8000	0.90	3.84
	MH70	1	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	4000	0.90	1.92
28	MH70	7	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	28000	0.90	11.58
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	F208	2	C	24	19	456	5.66	30%	30%	20%						
29	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
	F208	3	C	24	19	456	5.66	30%	30%	20%						
	F208	1	C	24	19	456	5.66	30%	30%	20%						
30	MH70	3	C	19	19	361	6.32	30%	30%	20%	0.191	1	4000	12000	0.90	5.73
	F208	4	C	19	19	361	6.32	30%	30%	20%						
31	MH70	2	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	8000	0.90	3.84
	MH70	2	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	8000	0.90	3.84
	F208	1	C	24	14	336	6.79	30%	30%	20%						
32	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
33	F208	6	B	29	24	696	1.90	30%	10%	20%	0.588	2	2650	31800	0.92	24.76
	F208	1	B	29	24	696	1.90	30%	10%	20%	0.588	2	2650	5300	0.92	4.13
	F208	3	C	29	24	696	4.57	30%	30%	20%						
	MH70	1	C	29	24	696	4.57	30%	30%	20%	0.244	1	4000	4000	0.90	1.27
34	F208	4	B	24	18	432	2.43	30%	10%	20%	0.554	2	2650	21200	0.92	25.06
	MH70	7	C	24	18	432	5.83	30%	30%	20%	0.204	1	4000	28000	0.90	11.93
	MH70	1	C	24	18	432	5.83	30%	30%	20%	0.204	1	4000	4000	0.90	1.70
35	MH70	4	C	24	15	360	6.50	30%	30%	20%	0.187	1	4000	16000	0.90	7.50
	F208	3	C	24	15	360	6.50	30%	30%	20%						
36	F208	14	B	59	19	1121	1.74	30%	10%	20%	0.601	2	2650	74200	0.92	36.66
	MH70	14	C	59	19	1121	4.17	30%	30%	20%	0.259	1	4000	56000	0.90	11.67
	F208	1	C	59	19	1121	4.17	30%	30%	20%						
37	F208	3	C	29	23	667	4.68	30%	30%	20%						
	MH70	7	C	29	23	667	4.68	30%	30%	20%	0.239	1	4000	28000	0.90	9.05
	MH70	1	C	29	23	667	4.68	30%	30%	20%	0.239	1	4000	4000	0.90	1.29
38	MH70	1	C	10	5	50	18.00	30%	30%	20%	0.115	1	4000	4000	0.90	8.30
39	MH70	5	C	21	19	399	6.02	30%	30%	20%	0.199	1	4000	20000	0.90	9.00
40	MH70	5	C	23	15	345	6.61	30%	30%	20%	0.184	1	4000	20000	0.90	9.62
41	MH70	2	C	23	8	184	10.11	30%	30%	20%	0.115	1	4000	8000	0.90	4.51

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
42	MH70	3	C	23	14	322	6.89	30%	30%	20%	0.177	1	4000	12000	0.90	5.95
	MH70	2	C	23	14	322	6.89	30%	30%	20%	0.177	1	4000	8000	0.90	3.97
43	MH70	2	C	11	7	77	14.03	30%	30%	20%	0.115	1	4000	8000	0.90	10.78
RN	MH70	3	R	50	8	400	3.63	30%	30%	20%	0.285	1	4000	12000	0.90	7.71
	MH70	2	L	50	8	400	3.63	30%	30%	20%	0.285	1	4000	8000	0.90	5.14
RW	MH70	4	L	459	8	3672	3.18	30%	30%	20%	0.308	1	4000	16000	0.90	1.21
	MH70	4	L	459	8	3672	3.18	30%	30%	20%	0.308	1	4000	16000	0.90	1.21
	MH70	24	R	459	8	3672	3.18	30%	30%	20%	0.308	1	4000	96000	0.90	7.26
RE	MH70	7	L	459	8	3672	3.18	30%	30%	20%	0.308	1	4000	28000	0.90	2.12
	MH70	20	R	459	8	3672	3.18	30%	30%	20%	0.308	1	4000	80000	0.90	6.05
RS	MH70	3	R	50	8	400	3.63	30%	30%	20%	0.285	1	4000	12000	0.90	7.71

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	2	C	25	14	350	6.69	30%	30%	20%	0.284	1	5450	10900	0.94	8.32
	F208	4	C	25	14	350	6.69	30%	30%	20%						
2	HP70	2	C	25	8	200	9.90	30%	30%	20%	0.181	1	5450	10900	0.94	9.28
3	HP70	5	C	25	15	375	6.40	30%	30%	20%	0.296	1	5450	27250	0.94	20.24
4	F208	10	C	89	24	2136	3.17	30%	30%	20%						
	F208	1	C	89	24	2136	3.17	30%	30%	20%						
	HP70	11	C	89	24	2136	3.17	30%	30%	20%	0.484	1	5450	59950	0.94	12.78
	HP70	7	C	89	24	2136	3.17	30%	30%	20%	0.484	1	5450	38150	0.94	8.13
5	HP70	7	C	54	24	1296	3.61	30%	30%	20%	0.449	1	5450	38150	0.94	12.44
	F208	11	B	54	24	1296	1.50	30%	10%	20%	0.620	2	2650	58300	0.92	25.70
	F208	2	B	54	24	1296	1.50	30%	10%	20%	0.620	2	2650	10600	0.92	4.67
6	HP70	6	C	29	24	696	4.57	30%	30%	20%	0.384	1	5450	32700	0.94	16.98
	F208	7	B	29	24	696	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	28.89
7	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
8	HP70	3	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	16350	0.94	12.82
	HP70	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	10900	0.94	8.55
	F208	3	B	24	14	336	2.83	30%	10%	20%	0.530	2	2650	15900	0.92	23.11
9	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
10	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
11	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
12	HP70	6	C	24	13	312	7.12	30%	30%	20%	0.268	1	5450	32700	0.94	26.43
	F208	3	B	24	13	312	2.96	30%	10%	20%	0.522	2	2650	15900	0.92	24.52
	HP70	2	C	24	13	312	7.12	30%	30%	20%	0.268	1	5450	10900	0.94	8.81
13	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
14	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
16	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F208	2	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	10600	0.92	11.95
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
17	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F208	1	C	24	19	456	5.66	30%	30%	20%						
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
18	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F208	2	C	24	19	456	5.66	30%	30%	20%						
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
19	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F208	2	C	24	19	456	5.66	30%	30%	20%						
	F208	2	C	24	19	456	5.66	30%	30%	20%						
20	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F208	2	C	24	19	456	5.66	30%	30%	20%						
21	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	F208	2	C	24	19	456	5.66	30%	30%	20%						
22	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
23	HP70	1	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	5450	0.94	4.27
	F208	1	C	24	14	336	6.79	30%	30%	20%						
	F208	3	B	24	14	336	2.83	30%	10%	20%	0.530	2	2650	15900	0.92	23.11
24	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F208	1	C	24	19	456	5.66	30%	30%	20%						
	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
25	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	F208	1	C	24	19	456	5.66	30%	30%	20%						
26	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	F208	2	C	24	19	456	5.66	30%	30%	20%						
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
27	F208	3	B	24	14	336	2.83	30%	10%	20%	0.530	2	2650	15900	0.92	23.11
	F208	2	C	24	14	336	6.79	30%	30%	20%						
	HP70	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	10900	0.94	8.55
	HP70	1	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	5450	0.94	4.27
28	HP70	7	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	38150	0.94	25.74
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	F208	2	C	24	19	456	5.66	30%	30%	20%						
29	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
	F208	3	C	24	19	456	5.66	30%	30%	20%						
	F208	1	C	24	19	456	5.66	30%	30%	20%						
30	HP70	3	C	19	19	361	6.32	30%	30%	20%	0.299	1	5450	16350	0.94	12.74
	F208	4	C	19	19	361	6.32	30%	30%	20%						
31	HP70	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	10900	0.94	8.55
	HP70	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	10900	0.94	8.55
	F208	1	C	24	14	336	6.79	30%	30%	20%						
32	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
33	F208	6	B	29	24	696	1.90	30%	10%	20%	0.588	2	2650	31800	0.92	24.76
	F208	1	B	29	24	696	1.90	30%	10%	20%	0.588	2	2650	5300	0.92	4.13
	F208	3	C	29	24	696	4.57	30%	30%	20%						
	HP70	1	C	29	24	696	4.57	30%	30%	20%	0.384	1	5450	5450	0.94	2.83
34	F208	4	B	24	18	432	2.43	30%	10%	20%	0.554	2	2650	21200	0.92	25.06
	HP70	7	C	24	18	432	5.83	30%	30%	20%	0.320	1	5450	38150	0.94	26.59
	HP70	1	C	24	18	432	5.83	30%	30%	20%	0.320	1	5450	5450	0.94	3.80
35	HP70	4	C	24	15	360	6.50	30%	30%	20%	0.292	1	5450	21800	0.94	16.64
	F208	3	C	24	15	360	6.50	30%	30%	20%						
36	F208	14	B	59	19	1121	1.74	30%	10%	20%	0.601	2	2650	74200	0.92	36.66
	HP70	14	C	59	19	1121	4.17	30%	30%	20%	0.408	1	5450	76300	0.94	26.13
	F208	1	C	59	19	1121	4.17	30%	30%	20%						
37	F208	3	C	29	23	667	4.68	30%	30%	20%						
	HP70	7	C	29	23	667	4.68	30%	30%	20%	0.377	1	5450	38150	0.94	20.29
	HP70	1	C	29	23	667	4.68	30%	30%	20%	0.377	1	5450	5450	0.94	2.90
38	HP70	1	C	10	5	50	18.00	30%	30%	20%	0.178	1	5450	5450	0.94	18.26
39	HP70	5	C	21	19	399	6.02	30%	30%	20%	0.311	1	5450	27250	0.94	19.98
40	HP70	5	C	23	15	345	6.61	30%	30%	20%	0.288	1	5450	27250	0.94	21.40
41	HP70	2	C	23	8	184	10.11	30%	30%	20%	0.178	1	5450	10900	0.94	9.92

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
42	HP70	3	C	23	14	322	6.89	30%	30%	20%	0.276	1	5450	16350	0.94	13.19
	HP70	2	C	23	14	322	6.89	30%	30%	20%	0.276	1	5450	10900	0.94	8.79
43	HP70	2	C	11	7	77	14.03	30%	30%	20%	0.178	1	5450	10900	0.94	23.71
RN	HP50	3	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	10800	0.94	11.38
	HP70	2	L	50	8	400	3.63	30%	30%	20%	0.448	1	5450	10900	0.94	11.49
RW	HP70	4	L	459	8	3672	3.18	30%	30%	20%	0.483	1	5450	21800	0.94	2.70
	HP70	4	L	459	8	3672	3.18	30%	30%	20%	0.483	1	5450	21800	0.94	2.70
	HP50	24	R	459	8	3672	3.18	30%	30%	20%	0.483	1	3600	86400	0.94	10.69
RE	HP70	7	L	459	8	3672	3.18	30%	30%	20%	0.483	1	5450	38150	0.94	4.72
	HP50	20	R	459	8	3672	3.18	30%	30%	20%	0.483	1	3600	72000	0.94	8.91
RS	HP50	3	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	10800	0.94	11.38

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	2	C	25	14	350	6.69	30%	30%	20%	0.182	1	4000	8000	0.90	3.75
	F312	4	C	25	14	350	6.69	30%	30%	20%						
2	MH70	2	C	25	8	200	9.90	30%	30%	20%	0.117	1	4000	8000	0.90	4.22
3	MH70	5	C	25	15	375	6.40	30%	30%	20%	0.189	1	4000	20000	0.90	9.09
4	F312	10	C	89	24	2136	3.17	30%	30%	20%						
	F212	1	C	89	24	2136	3.17	30%	30%	20%						
	MH70	11	C	89	24	2136	3.17	30%	30%	20%	0.308	1	4000	44000	0.90	5.72
	MH70	7	C	89	24	2136	3.17	30%	30%	20%	0.308	1	4000	28000	0.90	3.64
5	MH70	7	C	54	24	1296	3.61	30%	30%	20%	0.286	1	4000	28000	0.90	5.57
	F312	11	B	54	24	1296	1.50	30%	10%	20%	0.549	3	2570	84810	0.92	33.11
	F312	2	B	54	24	1296	1.50	30%	10%	20%	0.549	3	2570	15420	0.92	6.02
6	MH70	6	C	29	24	696	4.57	30%	30%	20%	0.244	1	4000	24000	0.90	7.59
	F312	7	B	29	24	696	1.90	30%	10%	20%	0.519	3	2570	53970	0.92	37.09
7	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
8	MH70	3	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	12000	0.90	5.77
	MH70	2	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	8000	0.90	3.84
	F312	3	B	24	14	336	2.83	30%	10%	20%	0.457	3	2570	23130	0.92	28.99
9	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
10	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
11	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	F312	3	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	23130	0.92	22.81
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
12	MH70	6	C	24	13	312	7.12	30%	30%	20%	0.205	1	4000	24000	0.90	14.23
	F312	3	B	24	13	312	2.96	30%	10%	20%	0.449	3	2570	23130	0.92	30.68
	MH70	2	C	24	13	312	7.12	30%	30%	20%	0.205	1	4000	8000	0.90	4.74
13	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F312	3	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	23130	0.92	22.81
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
14	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
16	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F312	2	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	15420	0.92	15.21
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
17	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F312	1	C	24	19	456	5.66	30%	30%	20%						
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
18	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F312	2	C	24	19	456	5.66	30%	30%	20%						
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
19	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F312	2	C	24	19	456	5.66	30%	30%	20%						
	F212	2	C	24	19	456	5.66	30%	30%	20%						
20	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F312	2	C	24	19	456	5.66	30%	30%	20%						
21	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	F312	2	C	24	19	456	5.66	30%	30%	20%						
22	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
23	MH70	1	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	4000	0.90	1.92
	F312	1	C	24	14	336	6.79	30%	30%	20%						
	F312	3	B	24	14	336	2.83	30%	10%	20%	0.457	3	2570	23130	0.92	28.99
24	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F312	1	C	24	19	456	5.66	30%	30%	20%						
	F312	3	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	23130	0.92	22.81
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
25	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	F212	1	C	24	19	456	5.66	30%	30%	20%						
26	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	F312	2	C	24	19	456	5.66	30%	30%	20%						
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
27	F312	3	B	24	14	336	2.83	30%	10%	20%	0.457	3	2570	23130	0.92	28.99
	F312	2	C	24	14	336	6.79	30%	30%	20%						
	MH70	2	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	8000	0.90	3.84
	MH70	1	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	4000	0.90	1.92
28	MH70	7	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	28000	0.90	11.58
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	F312	2	C	24	19	456	5.66	30%	30%	20%						
29	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
	F312	3	C	24	19	456	5.66	30%	30%	20%						
	F212	1	C	24	19	456	5.66	30%	30%	20%						
30	MH70	3	C	19	19	361	6.32	30%	30%	20%	0.191	1	4000	12000	0.90	5.73
	F312	4	C	19	19	361	6.32	30%	30%	20%						
31	MH70	2	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	8000	0.90	3.84
	MH70	2	C	24	14	336	6.79	30%	30%	20%	0.179	1	4000	8000	0.90	3.84
	F312	1	C	24	14	336	6.79	30%	30%	20%						
32	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
33	F312	6	B	29	24	696	1.90	30%	10%	20%	0.519	3	2570	46260	0.92	31.79
	F312	1	B	29	24	696	1.90	30%	10%	20%	0.519	3	2570	7710	0.92	5.30
	F312	3	C	29	24	696	4.57	30%	30%	20%						
	MH70	1	C	29	24	696	4.57	30%	30%	20%	0.244	1	4000	4000	0.90	1.27
34	F312	4	B	24	18	432	2.43	30%	10%	20%	0.483	3	2570	30840	0.92	31.78
	MH70	7	C	24	18	432	5.83	30%	30%	20%	0.204	1	4000	28000	0.90	11.93
	MH70	1	C	24	18	432	5.83	30%	30%	20%	0.204	1	4000	4000	0.90	1.70
35	MH70	4	C	24	15	360	6.50	30%	30%	20%	0.187	1	4000	16000	0.90	7.50
	F312	3	C	24	15	360	6.50	30%	30%	20%						
36	F312	14	B	59	19	1121	1.74	30%	10%	20%	0.531	3	2570	107940	0.92	47.12
	MH70	14	C	59	19	1121	4.17	30%	30%	20%	0.259	1	4000	56000	0.90	11.67
	F312	1	C	59	19	1121	4.17	30%	30%	20%						
37	F312	3	C	29	23	667	4.68	30%	30%	20%						
	MH70	7	C	29	23	667	4.68	30%	30%	20%	0.239	1	4000	28000	0.90	9.05
	MH70	1	C	29	23	667	4.68	30%	30%	20%	0.239	1	4000	4000	0.90	1.29
38	MH70	1	C	10	5	50	18.00	30%	30%	20%	0.115	1	4000	4000	0.90	8.30
39	MH70	5	C	21	19	399	6.02	30%	30%	20%	0.199	1	4000	20000	0.90	9.00
40	MH70	5	C	23	15	345	6.61	30%	30%	20%	0.184	1	4000	20000	0.90	9.62
41	MH70	2	C	23	8	184	10.11	30%	30%	20%	0.115	1	4000	8000	0.90	4.51

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
42	MH70	3	C	23	14	322	6.89	30%	30%	20%	0.177	1	4000	12000	0.90	5.95
	MH70	2	C	23	14	322	6.89	30%	30%	20%	0.177	1	4000	8000	0.90	3.97
43	MH70	2	C	11	7	77	14.03	30%	30%	20%	0.115	1	4000	8000	0.90	10.78
RN	MH70	3	R	50	8	400	3.63	30%	30%	20%	0.285	1	4000	12000	0.90	7.71
	MH70	2	L	50	8	400	3.63	30%	30%	20%	0.285	1	4000	8000	0.90	5.14
RW	MH70	4	L	459	8	3672	3.18	30%	30%	20%	0.308	1	4000	16000	0.90	1.21
	MH70	4	L	459	8	3672	3.18	30%	30%	20%	0.308	1	4000	16000	0.90	1.21
	MH70	24	R	459	8	3672	3.18	30%	30%	20%	0.308	1	4000	96000	0.90	7.26
RE	MH70	7	L	459	8	3672	3.18	30%	30%	20%	0.308	1	4000	28000	0.90	2.12
	MH70	20	R	459	8	3672	3.18	30%	30%	20%	0.308	1	4000	80000	0.90	6.05
RS	MH70	3	R	50	8	400	3.63	30%	30%	20%	0.285	1	4000	12000	0.90	7.71

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	2	C	25	14	350	6.69	30%	30%	20%	0.284	1	5450	10900	0.94	8.32
	F312	4	C	25	14	350	6.69	30%	30%	20%						
2	HP70	2	C	25	8	200	9.90	30%	30%	20%	0.181	1	5450	10900	0.94	9.28
3	HP70	5	C	25	15	375	6.40	30%	30%	20%	0.296	1	5450	27250	0.94	20.24
4	F312	10	C	89	24	2136	3.17	30%	30%	20%						
	F212	1	C	89	24	2136	3.17	30%	30%	20%						
	HP70	11	C	89	24	2136	3.17	30%	30%	20%	0.484	1	5450	59950	0.94	12.78
	HP70	7	C	89	24	2136	3.17	30%	30%	20%	0.484	1	5450	38150	0.94	8.13
5	HP70	7	C	54	24	1296	3.61	30%	30%	20%	0.449	1	5450	38150	0.94	12.44
	F312	11	B	54	24	1296	1.50	30%	10%	20%	0.549	3	2570	84810	0.92	33.11
	F312	2	B	54	24	1296	1.50	30%	10%	20%	0.549	3	2570	15420	0.92	6.02
6	HP70	6	C	29	24	696	4.57	30%	30%	20%	0.384	1	5450	32700	0.94	16.98
	F312	7	B	29	24	696	1.90	30%	10%	20%	0.519	3	2570	53970	0.92	37.09
7	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
8	HP70	3	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	16350	0.94	12.82
	HP70	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	10900	0.94	8.55
	F312	3	B	24	14	336	2.83	30%	10%	20%	0.457	3	2570	23130	0.92	28.99
9	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
10	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
11	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	F312	3	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	23130	0.92	22.81
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
12	HP70	6	C	24	13	312	7.12	30%	30%	20%	0.268	1	5450	32700	0.94	26.43
	F312	3	B	24	13	312	2.96	30%	10%	20%	0.449	3	2570	23130	0.92	30.68
	HP70	2	C	24	13	312	7.12	30%	30%	20%	0.268	1	5450	10900	0.94	8.81
13	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F312	3	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	23130	0.92	22.81
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
14	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
16	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F312	2	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	15420	0.92	15.21
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
17	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F312	1	C	24	19	456	5.66	30%	30%	20%						
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
18	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F312	2	C	24	19	456	5.66	30%	30%	20%						
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
19	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F312	2	C	24	19	456	5.66	30%	30%	20%						
	F212	2	C	24	19	456	5.66	30%	30%	20%						
20	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F312	2	C	24	19	456	5.66	30%	30%	20%						
21	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	F312	2	C	24	19	456	5.66	30%	30%	20%						
22	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
23	HP70	1	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	5450	0.94	4.27
	F312	1	C	24	14	336	6.79	30%	30%	20%						
	F312	3	B	24	14	336	2.83	30%	10%	20%	0.457	3	2570	23130	0.92	28.99
24	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F312	1	C	24	19	456	5.66	30%	30%	20%						
	F312	3	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	23130	0.92	22.81
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
25	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	F212	1	C	24	19	456	5.66	30%	30%	20%						
26	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	F312	2	C	24	19	456	5.66	30%	30%	20%						
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
27	F312	3	B	24	14	336	2.83	30%	10%	20%	0.457	3	2570	23130	0.92	28.99
	F312	2	C	24	14	336	6.79	30%	30%	20%						
	HP70	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	10900	0.94	8.55
	HP70	1	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	5450	0.94	4.27
28	HP70	7	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	38150	0.94	25.74
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	F312	2	C	24	19	456	5.66	30%	30%	20%						
29	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
	F312	3	C	24	19	456	5.66	30%	30%	20%						
	F212	1	C	24	19	456	5.66	30%	30%	20%						
30	HP70	3	C	19	19	361	6.32	30%	30%	20%	0.299	1	5450	16350	0.94	12.74
	F312	4	C	19	19	361	6.32	30%	30%	20%						
31	HP70	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	10900	0.94	8.55
	HP70	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	5450	10900	0.94	8.55
	F312	1	C	24	14	336	6.79	30%	30%	20%						
32	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
33	F312	6	B	29	24	696	1.90	30%	10%	20%	0.519	3	2570	46260	0.92	31.79
	F312	1	B	29	24	696	1.90	30%	10%	20%	0.519	3	2570	7710	0.92	5.30
	F312	3	C	29	24	696	4.57	30%	30%	20%						
	HP70	1	C	29	24	696	4.57	30%	30%	20%	0.384	1	5450	5450	0.94	2.83
34	F312	4	B	24	18	432	2.43	30%	10%	20%	0.483	3	2570	30840	0.92	31.78
	HP70	7	C	24	18	432	5.83	30%	30%	20%	0.320	1	5450	38150	0.94	26.59
	HP70	1	C	24	18	432	5.83	30%	30%	20%	0.320	1	5450	5450	0.94	3.80
35	HP70	4	C	24	15	360	6.50	30%	30%	20%	0.292	1	5450	21800	0.94	16.64
	F312	3	C	24	15	360	6.50	30%	30%	20%						
36	F312	14	B	59	19	1121	1.74	30%	10%	20%	0.531	3	2570	107940	0.92	47.12
	HP70	14	C	59	19	1121	4.17	30%	30%	20%	0.408	1	5450	76300	0.94	26.13
	F312	1	C	59	19	1121	4.17	30%	30%	20%						
37	F312	3	C	29	23	667	4.68	30%	30%	20%						
	HP70	7	C	29	23	667	4.68	30%	30%	20%	0.377	1	5450	38150	0.94	20.29
	HP70	1	C	29	23	667	4.68	30%	30%	20%	0.377	1	5450	5450	0.94	2.90
38	HP70	1	C	10	5	50	18.00	30%	30%	20%	0.178	1	5450	5450	0.94	18.26
39	HP70	5	C	21	19	399	6.02	30%	30%	20%	0.311	1	5450	27250	0.94	19.98
40	HP70	5	C	23	15	345	6.61	30%	30%	20%	0.288	1	5450	27250	0.94	21.40
41	HP70	2	C	23	8	184	10.11	30%	30%	20%	0.178	1	5450	10900	0.94	9.92

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
42	HP70	3	C	23	14	322	6.89	30%	30%	20%	0.276	1	5450	16350	0.94	13.19
	HP70	2	C	23	14	322	6.89	30%	30%	20%	0.276	1	5450	10900	0.94	8.79
43	HP70	2	C	11	7	77	14.03	30%	30%	20%	0.178	1	5450	10900	0.94	23.71
RN	HP50	3	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	10800	0.94	11.38
	HP70	2	L	50	8	400	3.63	30%	30%	20%	0.448	1	5450	10900	0.94	11.49
RW	HP70	4	L	459	8	3672	3.18	30%	30%	20%	0.483	1	5450	21800	0.94	2.70
	HP70	4	L	459	8	3672	3.18	30%	30%	20%	0.483	1	5450	21800	0.94	2.70
	HP50	24	R	459	8	3672	3.18	30%	30%	20%	0.483	1	3600	86400	0.94	10.69
RE	HP70	7	L	459	8	3672	3.18	30%	30%	20%	0.483	1	5450	38150	0.94	4.72
	HP50	20	R	459	8	3672	3.18	30%	30%	20%	0.483	1	3600	72000	0.94	8.91
RS	HP50	3	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	10800	0.94	11.38

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	2	C	25	14	350	6.69	30%	30%	20%	0.284	1	3600	7200	0.94	5.50
	F208	4	C	25	14	350	6.69	30%	30%	20%						
2	HP50	2	C	25	8	200	9.90	30%	30%	20%	0.181	1	3600	7200	0.94	6.13
3	HP50	5	C	25	15	375	6.40	30%	30%	20%	0.296	1	3600	18000	0.94	13.37
4	F208	10	C	89	24	2136	3.17	30%	30%	20%						
	F208	1	C	89	24	2136	3.17	30%	30%	20%						
	HP50	11	C	89	24	2136	3.17	30%	30%	20%	0.484	1	3600	39600	0.94	8.44
	HP50	7	C	89	24	2136	3.17	30%	30%	20%	0.484	1	3600	25200	0.94	5.37
5	HP50	7	C	54	24	1296	3.61	30%	30%	20%	0.449	1	3600	25200	0.94	8.21
	F208	11	B	54	24	1296	1.50	30%	10%	20%	0.620	2	2650	58300	0.92	25.70
	F208	2	B	54	24	1296	1.50	30%	10%	20%	0.620	2	2650	10600	0.92	4.67
6	HP50	6	C	29	24	696	4.57	30%	30%	20%	0.384	1	3600	21600	0.94	11.21
	F208	7	B	29	24	696	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	28.89
7	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP50	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	3600	0.94	2.43
	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
8	HP50	3	C	24	14	336	6.79	30%	30%	20%	0.280	1	3600	10800	0.94	8.47
	HP50	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	3600	7200	0.94	5.65
	F208	3	B	24	14	336	2.83	30%	10%	20%	0.530	2	2650	15900	0.92	23.11
9	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
10	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
11	HP50	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	10800	0.94	7.29
	HP50	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	3600	0.94	2.43
	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
12	HP50	6	C	24	13	312	7.12	30%	30%	20%	0.268	1	3600	21600	0.94	17.46
	F208	3	B	24	13	312	2.96	30%	10%	20%	0.522	2	2650	15900	0.92	24.52
	HP50	2	C	24	13	312	7.12	30%	30%	20%	0.268	1	3600	7200	0.94	5.82
13	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
14	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
16	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
	F208	2	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	10600	0.92	11.95
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
17	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
	F208	1	C	24	19	456	5.66	30%	30%	20%						
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
18	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
	F208	2	C	24	19	456	5.66	30%	30%	20%						
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
19	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
	F208	2	C	24	19	456	5.66	30%	30%	20%						
	F208	2	C	24	19	456	5.66	30%	30%	20%						
20	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
	F208	2	C	24	19	456	5.66	30%	30%	20%						
21	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	F208	2	C	24	19	456	5.66	30%	30%	20%						
22	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
23	HP50	1	C	24	14	336	6.79	30%	30%	20%	0.280	1	3600	3600	0.94	2.82
	F208	1	C	24	14	336	6.79	30%	30%	20%						
	F208	3	B	24	14	336	2.83	30%	10%	20%	0.530	2	2650	15900	0.92	23.11
24	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
	F208	1	C	24	19	456	5.66	30%	30%	20%						
	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
25	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP50	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	3600	0.94	2.43
	F208	1	C	24	19	456	5.66	30%	30%	20%						
26	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	F208	2	C	24	19	456	5.66	30%	30%	20%						
	HP50	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	3600	0.94	2.43
	HP50	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	3600	0.94	2.43

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
27	F208	3	B	24	14	336	2.83	30%	10%	20%	0.530	2	2650	15900	0.92	23.11
	F208	2	C	24	14	336	6.79	30%	30%	20%						
	HP50	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	3600	7200	0.94	5.65
	HP50	1	C	24	14	336	6.79	30%	30%	20%	0.280	1	3600	3600	0.94	2.82
28	HP50	7	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	25200	0.94	17.00
	HP50	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	3600	0.94	2.43
	F208	2	C	24	19	456	5.66	30%	30%	20%						
29	HP50	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	10800	0.94	7.29
	F208	3	C	24	19	456	5.66	30%	30%	20%						
	F208	1	C	24	19	456	5.66	30%	30%	20%						
30	HP50	3	C	19	19	361	6.32	30%	30%	20%	0.299	1	3600	10800	0.94	8.42
	F208	4	C	19	19	361	6.32	30%	30%	20%						
31	HP50	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	3600	7200	0.94	5.65
	HP50	2	C	24	14	336	6.79	30%	30%	20%	0.280	1	3600	7200	0.94	5.65
	F208	1	C	24	14	336	6.79	30%	30%	20%						
32	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP50	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	3600	0.94	2.43
	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
33	F208	6	B	29	24	696	1.90	30%	10%	20%	0.588	2	2650	31800	0.92	24.76
	F208	1	B	29	24	696	1.90	30%	10%	20%	0.588	2	2650	5300	0.92	4.13
	F208	3	C	29	24	696	4.57	30%	30%	20%						
	HP50	1	C	29	24	696	4.57	30%	30%	20%	0.384	1	3600	3600	0.94	1.87
34	F208	4	B	24	18	432	2.43	30%	10%	20%	0.554	2	2650	21200	0.92	25.06
	HP50	7	C	24	18	432	5.83	30%	30%	20%	0.320	1	3600	25200	0.94	17.56
	HP50	1	C	24	18	432	5.83	30%	30%	20%	0.320	1	3600	3600	0.94	2.51
35	HP50	4	C	24	15	360	6.50	30%	30%	20%	0.292	1	3600	14400	0.94	10.99
	F208	3	C	24	15	360	6.50	30%	30%	20%						
36	F208	14	B	59	19	1121	1.74	30%	10%	20%	0.601	2	2650	74200	0.92	36.66
	HP50	14	C	59	19	1121	4.17	30%	30%	20%	0.408	1	3600	50400	0.94	17.26
	F208	1	C	59	19	1121	4.17	30%	30%	20%						
37	F208	3	C	29	23	667	4.68	30%	30%	20%						
	HP50	7	C	29	23	667	4.68	30%	30%	20%	0.377	1	3600	25200	0.94	13.40
	HP50	1	C	29	23	667	4.68	30%	30%	20%	0.377	1	3600	3600	0.94	1.91
38	HP50	1	C	10	5	50	18.00	30%	30%	20%	0.178	1	3600	3600	0.94	12.06
39	HP50	5	C	21	19	399	6.02	30%	30%	20%	0.311	1	3600	18000	0.94	13.20
40	HP50	5	C	23	15	345	6.61	30%	30%	20%	0.288	1	3600	18000	0.94	14.14
41	HP50	2	C	23	8	184	10.11	30%	30%	20%	0.178	1	3600	7200	0.94	6.55

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
42	HP50	3	C	23	14	322	6.89	30%	30%	20%	0.276	1	3600	10800	0.94	8.71
	HP50	2	C	23	14	322	6.89	30%	30%	20%	0.276	1	3600	7200	0.94	5.81
43	HP50	2	C	11	7	77	14.03	30%	30%	20%	0.178	1	3600	7200	0.94	15.66
RN	HP50	3	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	10800	0.94	11.38
	HP50	2	L	50	8	400	3.63	30%	30%	20%	0.448	1	3600	7200	0.94	7.59
RW	HP50	4	L	459	8	3672	3.18	30%	30%	20%	0.483	1	3600	14400	0.94	1.78
	HP50	4	L	459	8	3672	3.18	30%	30%	20%	0.483	1	3600	14400	0.94	1.78
	HP50	24	R	459	8	3672	3.18	30%	30%	20%	0.483	1	3600	86400	0.94	10.69
RE	HP50	7	L	459	8	3672	3.18	30%	30%	20%	0.483	1	3600	25200	0.94	3.12
	HP50	20	R	459	8	3672	3.18	30%	30%	20%	0.483	1	3600	72000	0.94	8.91
RS	HP50	3	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	10800	0.94	11.38

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50
2	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
3	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
4	F312	10	C	2496	3	14000	1.8	$45	0.2	$18	3.3	$63	$126
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
	I200	16	C	2496	1	700	57.1	$569	0.0	$0	5.3	$84	$653
	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
5	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
	I200	13	B	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
6	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
	I200	9	B	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
7	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
8	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
9	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
10	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
11	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
12	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
	I200	3	B	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
13	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
14	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
Page Total		198						$6,355		$39		$1,061	$7,455

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
15	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
16	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	3	B	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
17	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
18	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
19	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
20	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
21	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
22	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
23	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
24	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
25	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
26	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
Page Total		119						$3,606		$35		$644	$4,286

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
27	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
28	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
29	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
30	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50
31	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
32	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
33	I200	7	B	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
34	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
35	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
36	I200	17	B	2496	1	700	60.6	$604	0.0	$0	5.7	$89	$693
	I200	20	C	2496	1	700	71.3	$711	0.0	$0	6.7	$105	$816
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
37	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
38	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
39	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
40	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
41	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
Page Total		171						$5,054		$59		$931	$6,044

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
42	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
43	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
RN	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	2	L	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
RW	I200	4	L	2496	1	700	14.3	$142	0.0	$0	1.3	$21	$163
	MV10	4	L	2496	1	16800	0.6	$17	0.1	$11	1.3	$35	$62
	MV10	24	R	2496	1	16800	3.6	$99	0.5	$66	8.0	$209	$375
RE	I200	7	L	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	I200	20	R	2496	1	700	71.3	$711	0.0	$0	6.7	$105	$816
RS	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
Page Total		78						$1,893		$77		$506	$2,477
Building Total		566						$16,909		$210		$3,142	$20,261

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
2	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
4	F208	10	C	2496	2	14000	1.8	$25	0.2	$16	3.3	$63	$104	$22
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
5	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	F208	11	B	2496	2	14000	2.0	$28	0.2	$18	3.7	$69	$115	$416
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
6	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$294
7	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
8	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
9	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
10	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
11	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$213
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
12	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$91
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
13	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
14	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
Page Total		139						$2,445		$372		$1,054	$3,871	$3,584

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
16	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$102
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
17	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
18	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
19	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
20	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
21	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
22	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
23	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
24	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
25	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
26	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Page Total		84						$1,061		$196		$601	$1,858	$2,428

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
27	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
28	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
29	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
30	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
31	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
32	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
33	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$223
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
34	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	($4)
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
35	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
36	F208	14	B	2496	2	14000	2.5	$35	0.3	$23	4.7	$88	$146	$547
	MH70	14	C	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	$212
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
37	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
38	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
39	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
40	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
41	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
Page Total		127						$2,358		$349		$974	$3,681	$2,363

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
42	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
43	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
RN	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
	MH70	2	L	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
RW	MH70	4	L	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
	MH70	4	L	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($110)
	MH70	24	R	2496	1	5250	11.4	$740	0.5	$86	8.0	$209	$1,036	($661)
RE	MH70	7	L	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	($17)
	MH70	20	R	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	($47)
RS	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Page Total		74						$2,282		$266		$645	$3,193	($717)
Building Total		424						$8,145		$1,184		$3,274	$12,603	$7,658

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
2	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
4	F208	10	C	2496	2	14000	1.8	$25	0.2	$16	3.3	$63	$104	$22
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
5	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	F208	11	B	2496	2	14000	2.0	$28	0.2	$18	3.7	$69	$115	$416
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
6	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$294
7	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
8	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
9	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
10	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
11	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$213
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
12	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$91
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
13	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
14	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
Page Total		139						$599		$381		$1,054	$2,034	$5,421

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
16	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$102
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
17	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
18	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
19	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
20	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
21	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
22	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
23	HP70	1	C	0	1	16800	0.0	$0	0.0	$4	0.3	$9	$12	$69
	F208	1	C	0	2	14000	0.0	$0	0.0	$2	0.3	$6	$8	$5
	F208	3	B	0	2	14000	0.0	$0	0.1	$5	1.0	$19	$24	$180
24	HP70	2	C	0	1	16800	0.0	$0	0.0	$7	0.7	$17	$25	$97
	F208	1	C	0	2	14000	0.0	$0	0.0	$2	0.3	$6	$8	$5
	F208	3	B	0	2	14000	0.0	$0	0.1	$5	1.0	$19	$24	$180
	F208	1	B	0	2	14000	0.0	$0	0.0	$2	0.3	$6	$8	$17
25	F208	4	B	0	2	14000	0.0	$0	0.1	$7	1.3	$25	$32	$172
	HP70	1	C	0	1	16800	0.0	$0	0.0	$4	0.3	$9	$12	$69
	F208	1	C	0	2	14000	0.0	$0	0.0	$2	0.3	$6	$8	$3
26	F208	4	B	0	2	14000	0.0	$0	0.1	$7	1.3	$25	$32	$213
	F208	2	C	0	2	14000	0.0	$0	0.0	$3	0.7	$13	$16	$9
	HP70	1	C	0	1	16800	0.0	$0	0.0	$4	0.3	$9	$12	$69
	HP70	1	C	0	1	16800	0.0	$0	0.0	$4	0.3	$9	$12	$69
Page Total		84						$227		$200		$601	$1,027	$3,258

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VII-94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
27	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
28	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
29	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
30	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
31	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
32	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
33	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$223
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
34	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	($4)
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
35	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
36	F208	14	B	2496	2	14000	2.5	$35	0.3	$23	4.7	$88	$146	$547
	HP70	14	C	2496	1	16800	2.1	$82	0.3	$52	4.7	$122	$257	$559
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
37	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
38	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
39	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
40	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
41	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
Page Total		127						$562		$358		$974	$1,893	$4,151

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
42	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
43	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
RN	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
	HP70	2	L	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$45
RW	HP70	4	L	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$90
	HP70	4	L	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	($11)
	HP50	24	R	2496	1	16800	3.6	$155	0.5	$86	8.0	$209	$451	($76)
RE	HP70	7	L	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$157
	HP50	20	R	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$440
RS	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Page Total		74						$464		$269		$645	$1,378	$1,098
Building Total		424						$1,851		$1,208		$3,274	$6,333	$13,928

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$0
2	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
4	F312	10	C	2496	3	14000	1.8	$45	0.2	$18	3.3	$63	$126	$0
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
5	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	F312	11	B	2496	3	14000	2.0	$50	0.2	$20	3.7	$69	$139	$391
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
6	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$279
7	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
8	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
9	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
10	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
11	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$207
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
12	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$85
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
13	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
14	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
Page Total		139						$2,575		$383		$1,054	$4,012	$3,443

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
16	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$97
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
17	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
18	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
19	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
20	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
21	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
22	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
23	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
24	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
25	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
26	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Page Total		84						$1,166		$204		$601	$1,971	$2,315

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VII-98

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
27	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
28	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
29	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
30	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$0
31	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
32	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
33	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$210
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
34	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	($13)
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
35	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
36	F312	14	B	2496	3	14000	2.5	$63	0.3	$25	4.7	$88	$177	$517
	MH70	14	C	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	$212
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
37	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
38	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
39	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
40	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
41	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
Page Total		127						$2,468		$358		$974	$3,799	$2,244

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
42	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
43	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
RN	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
	MH70	2	L	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
RW	MH70	4	L	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
	MH70	4	L	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($110)
	MH70	24	R	2496	1	5250	11.4	$740	0.5	$86	8.0	$209	$1,036	($661)
RE	MH70	7	L	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	($17)
	MH70	20	R	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	($47)
RS	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Page Total		74						$2,282		$266		$645	$3,193	($717)
Building Total		424						$8,491		$1,211		$3,274	$12,976	$7,286

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$0
2	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
4	F312	10	C	2496	3	14000	1.8	$45	0.2	$18	3.3	$63	$126	$0
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
5	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	F312	11	B	2496	3	14000	2.0	$50	0.2	$20	3.7	$69	$139	$391
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
6	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$279
7	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
8	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
9	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
10	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
11	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$207
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
12	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$85
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
13	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
14	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
Page Total		139						$729		$392		$1,054	$2,175	$5,280

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
16	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$97
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
17	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
18	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
19	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
20	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
21	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
22	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
23	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
24	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
25	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
26	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
Page Total		84						$418		$208		$601	$1,226	$3,059

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
27	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
28	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
29	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
30	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$0
31	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
32	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
33	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$210
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
34	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	($13)
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
35	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
36	F312	14	B	2496	3	14000	2.5	$63	0.3	$25	4.7	$88	$177	$517
	HP70	14	C	2496	1	16800	2.1	$82	0.3	$52	4.7	$122	$257	$559
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
37	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
38	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
39	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
40	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
41	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
Page Total		127						$672		$366		$974	$2,012	$4,032

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
42	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
43	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
RN	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
	HP70	2	L	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$45
RW	HP70	4	L	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$90
	HP70	4	L	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	($11)
	HP50	24	R	2496	1	16800	3.6	$155	0.5	$86	8.0	$209	$451	($76)
RE	HP70	7	L	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$157
	HP50	20	R	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$440
RS	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Page Total		74						$464		$269		$645	$1,378	$1,098
Building Total		424						$2,282		$1,235		$3,274	$6,791	$13,470

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
2	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
3	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
4	F208	10	C	2496	2	14000	1.8	$25	0.2	$16	3.3	$63	$104	$22
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	HP50	11	C	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$446
	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
5	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
	F208	11	B	2496	2	14000	2.0	$28	0.2	$18	3.7	$69	$115	$416
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
6	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$294
7	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
8	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
9	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
10	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
11	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$213
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
12	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$91
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
13	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
14	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
Page Total		139						$641		$372		$1,054	$2,067	$5,388

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
16	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$102
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
17	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
18	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
19	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
20	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
21	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
22	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
23	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
24	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
25	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
26	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
Page Total		84						$329		$196		$601	$1,127	$3,159

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
27	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
28	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
29	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
30	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
31	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
32	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
33	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$223
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
34	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	($4)
	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
35	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
36	F208	14	B	2496	2	14000	2.5	$35	0.3	$23	4.7	$88	$146	$547
	HP50	14	C	2496	1	16800	2.1	$90	0.3	$50	4.7	$122	$263	$553
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
37	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
38	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
39	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
40	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
41	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
Page Total		127						$603		$349		$974	$1,926	$4,118

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
42	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
43	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
RN	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
	HP50	2	L	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
RW	HP50	4	L	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
	HP50	4	L	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	($13)
	HP50	24	R	2496	1	16800	3.6	$155	0.5	$86	8.0	$209	$451	($76)
RE	HP50	7	L	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$154
	HP50	20	R	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$440
RS	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Page Total		74						$478		$266		$645	$1,389	$1,087
Building Total		424						$2,051		$1,184		$3,274	$6,509	$13,753

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Existing Fixtures												Upgrade Fixtures					Baseline Total							
Room No.	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1*	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
*	F212	1	8-0	C	30	350	33	82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
2	I200	3	7-0	C	36	400	37	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
3*	I200	1	6-6	C	30	630	59	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
*	F212	4	7-6	C	30	470	44	82	0.33	$149	$14	$59	F212	0	82	0.00	$0	F212	4	48	52	819	0	819	$223
4	I200	10	7-0	B	42	370	34	200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	8	7-6	C	36	270	25	132	1.06	$354	$36	$111	F312	0	132	0.00	$0	F312	8	48	52	2,636	0	2,636	$502
5	I200	4	7-0	B				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F312	3	9-0	C				132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
6	I200	3	6-6	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	1	7-0	B				132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
	I200	3	8-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	5	8-0	C				132	0.66	$221	$23	$70	F312	0	132	0.00	$0	F312	5	48	52	1,647	0	1,647	$314
7	I200	4	7-0	B	32	270	25	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	2	7-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
8	I200	4	6-6	B				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	5	9-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
9	F312	3	6-6	B	32	470	44	132	0.40	$133	$14	$42	F312	2	132	0.26	$1,393	F312	5	48	52	988	659	1,647	$1,581
	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
10	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	3	9-0	C				132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
11	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
12	I200	3	7-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	1	7-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
13	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
14	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
15	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
16	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
17	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
18	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
19	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
20	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
21	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
22	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
New Panel																	$1,500								$1,500
Page Total		98							17.24	$3,059	$135	$1,386		44		8.60	$32,646					43,036	21,456	64,492	$37,226

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total								
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
23	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
24	I200	16	7-2	B	31	380	35	200	3.20	$411	$0	$227	I200	7	200	1.40	$4,961	I200	23	48	52	7,987	3,494	11,482	$5,599
	F312	1	7-0	B				132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
	I200	10	10-0	C	36	510	47	200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
25	I200	5	8-6	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
26	I200	7	8-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
27	I200	10	6-0	B	34	450	42	200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
	F312	2	6-0	B				132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
	I200	3	8-6	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	2	8-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
28	I200	7	8-6	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
29	I200	4	7-6	B	32	430	40	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
30	I200	4	7-6	B	32	325	30	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	4	10-6	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
31	I200	4	7-6	B	32	450	42	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	5	11-6	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
32	I200	2	8-0	B	32	450	42	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	1	7-0	B				132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
	I200	5	9-6	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
33	I200	4	8-0	B	32	300	28	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	4	11-6	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
34	I200	10	7-0	B	32	330	31	200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
	I200	10	8-6	C				200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
35	I200	9	8-0	C	30	185	17	200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
36	I200	3	9-2	C	36	200	19	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
R1	I200	13	8-0	R				200	2.60	$334	$0	$184	I200	0	200	0.00	$0	I200	13	48	52	6,490	0	6,490	$518
	MV10	14	7-0	L				127	1.78	$755	$97	$144	MV10	0	127	0.00	$0	MV10	14	48	52	4,438	0	4,438	$996
R2	I200	4	8-0	R				200	0.80	$103	$0	$57	I200	0	200	0.00	$0	I200	4	48	52	1,997	0	1,997	$159
	I200	2	7-0	L				200	0.40	$51	$0	$28	I200	0	200	0.00	$0	I200	2	48	52	998	0	998	$80
	MV10	4	7-0	L				127	0.51	$216	$37	$46	MV10	0	127	0.00	$0	MV10	4	48	52	1,268	0	1,268	$299
R3	I200	9	8-0	R				200	1.80	$231	$0	$128	I200	0	200	0.00	$0	I200	9	48	52	4,493	0	4,493	$359
	MV10	4	7-0	L				127	0.51	$216	$37	$46	MV10	0	127	0.00	$0	MV10	4	48	52	1,268	0	1,268	$299
R4	I200	11	8-0	R				200	2.20	$283	$0	$156	I200	0	200	0.00	$0	I200	11	48	52	5,491	0	5,491	$439
	I200	1	7-0	L				200	0.20	$26	$0	$14	I200	0	200	0.00	$0	I200	1	48	52	499	0	499	$40
R5	I200	8	8-0	R				200	1.60	$206	$0	$113	I200	0	200	0.00	$0	I200	8	48	52	3,994	0	3,994	$319
R6	I200	4	8-0	R				200	0.80	$103	$0	$57	I200	0	200	0.00	$0	I200	4	48	52	1,997	0	1,997	$159
	MV10	2	8-0	R				127	0.25	$108	$19	$23	MV10	0	127	0.00	$0	MV10	2	48	52	634	0	634	$149
Page Total		213							40.44	$6,262	$216	$2,936		62		12.20	$43,902					100,938	30,441	131,379	$53,316

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures											Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
R7	I200	3	9-3	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
M1	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
M2	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
M3	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
M4	I200	5	7-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
M5	I200	5	7-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
Page Total		22							4.40	$565	$0	$312		10		2.00	$7,087					10,982	4,992	15,974	$7,964
Building Tot		333							62.08	$9,887	$351	$4,633		116		22.79	$83,635					154,957	56,889	211,846	$98,506

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1*	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
*	F212	1	C	350	33	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
2	I200	5	C	400	37	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
3*	I200	2	C	630	59	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
*	F212	4	C	470	44	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
4	I200	14	B	370	34	200	2.80	$3,233	F208	9		62	0.56	$6,267	48	52	6,989	1,393	5,596	($3,034)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	8	C	270	25	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
5	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
6	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	5	C			132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
7	I200	6	B	270	25	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
8	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
9	F312	5	B	470	44	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
10	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
11	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
12	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
13	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
14	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
15	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
16	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
17	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
18	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
19	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
20	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
21	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
22	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
New Panel								$1,500												$1,500
Page Total		142					25.84	$37,226		98			7.21	$62,276			64,492	17,996	46,495	($25,051)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
23	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
24	I200	23	B	380	35	200	4.60	$5,599	F208	18		62	1.18	$13,231	48	52	11,482	2,940	8,541	($7,632)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	14	C	510	47	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
25	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
26	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
27	I200	14	B	450	42	200	2.80	$3,233	F208	18		62	1.12	$12,534	48	52	6,989	2,786	4,203	($9,301)
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
28	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
29	I200	6	B	430	40	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
30	I200	6	B	325	30	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
31	I200	6	B	450	42	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
32	I200	3	B	450	42	200	0.60	$788	F208	3		62	0.19	$2,089	48	52	1,498	464	1,033	($1,301)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
33	I200	6	B	300	28	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
34	I200	14	B	330	31	200	2.80	$3,233	F208	9		62	0.56	$6,267	48	52	6,989	1,393	5,596	($3,034)
	I200	14	C			200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
35	I200	13	C	185	17	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
36	I200	5	C	200	19	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
R1	I200	13	R			200	2.60	$518	MH70	13		89	1.16	$7,160	48	52	6,490	2,888	3,602	($6,642)
	MV10	14	L			127	1.78	$996	MH70	14		89	1.25	$7,711	48	52	4,438	3,110	1,328	($6,715)
R2	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
	I200	2	L			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
	MV10	4	L			127	0.51	$299	MH70	4		89	0.36	$2,203	48	52	1,268	889	379	($1,904)
R3	I200	9	R			200	1.80	$359	MH70	9		89	0.80	$5,148	48	52	4,493	1,999	2,494	($4,789)
	MV10	4	L			127	0.51	$299	MH70	4		89	0.36	$2,203	48	52	1,268	889	379	($1,904)
R4	I200	11	R			200	2.20	$439	MH70	11		89	0.98	$6,292	48	52	5,491	2,444	3,048	($5,854)
	I200	1	L			200	0.20	$40	MH70	1		89	0.09	$572	48	52	499	222	277	($532)
R5	I200	8	R			200	1.60	$319	MH70	8		89	0.71	$4,576	48	52	3,994	1,777	2,216	($4,257)
R6	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,288	48	52	1,997	889	1,108	($2,129)
	MV10	2	R			127	0.25	$149	MH70	2		89	0.18	$1,102	48	52	634	444	190	($952)
Page Total		275					52.64	$53,316		224			18.02	$134,409			131,379	44,975	86,404	($81,092)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
R7	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
M1	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
M2	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
M3	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
M4	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
M5	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
Page Total		32					6.40	$7,964		22			1.96	$12,117			15,974	4,887	11,087	($4,153)
Building Tot		449					84.87	$98,506		344			27.19	$208,802			211,846	67,859	143,987	($110,296)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1*	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
*	F212	1	C	350	33	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
2	I200	5	C	400	37	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
3*	I200	2	C	630	59	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
*	F212	4	C	470	44	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
4	I200	14	B	370	34	200	2.80	$3,233	F208	9		62	0.56	$6,267	48	52	6,989	1,393	5,596	($3,034)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	8	C	270	25	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
5	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
6	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	5	C			132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
7	I200	6	B	270	25	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
8	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
9	F312	5	B	470	44	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
10	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
11	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
12	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
13	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
14	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
15	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
16	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
17	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
18	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
19	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
20	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
21	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
22	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
New Panel								$1,500												$1,500
Page Total		142					25.84	$37,226		98			7.63	$64,907			64,492	19,044	45,447	($27,681)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
23	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
24	I200	23	B	380	35	200	4.60	$5,599	F208	18		62	1.18	$13,231	48	52	11,482	2,940	8,541	($7,632)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	14	C	510	47	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
25	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
26	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
27	I200	14	B	450	42	200	2.80	$3,233	F208	18		62	1.12	$12,534	48	52	6,989	2,786	4,203	($9,301)
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
28	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
29	I200	6	B	430	40	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
30	I200	6	B	325	30	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
31	I200	6	B	450	42	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
32	I200	3	B	450	42	200	0.60	$788	F208	3		62	0.19	$2,089	48	52	1,498	464	1,033	($1,301)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
33	I200	6	B	300	28	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
34	I200	14	B	330	31	200	2.80	$3,233	F208	9		62	0.56	$6,267	48	52	6,989	1,393	5,596	($3,034)
	I200	14	C			200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
35	I200	13	C	185	17	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
36	I200	5	C	200	19	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
R1	I200	13	R			200	2.60	$518	HP50	13		58	0.75	$7,843	48	52	6,490	1,882	4,608	($7,325)
	MV10	14	L			127	1.78	$996	HP70	14		99	1.39	$8,637	48	52	4,438	3,459	978	($7,641)
R2	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
	I200	2	L			200	0.40	$80	HP70	2		99	0.20	$1,234	48	52	998	494	504	($1,154)
	MV10	4	L			127	0.51	$299	HP70	4		99	0.40	$2,468	48	52	1,268	988	280	($2,169)
R3	I200	9	R			200	1.80	$359	HP50	9		58	0.52	$5,430	48	52	4,493	1,303	3,190	($5,071)
	MV10	4	L			127	0.51	$299	HP70	4		99	0.40	$2,468	48	52	1,268	988	280	($2,169)
R4	I200	11	R			200	2.20	$439	HP50	11		58	0.64	$6,636	48	52	5,491	1,592	3,899	($6,198)
	I200	1	L			200	0.20	$40	HP70	1		99	0.10	$617	48	52	499	247	252	($577)
R5	I200	8	R			200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,158	2,835	($4,508)
R6	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
	MV10	2	R			127	0.25	$149	HP50	2		58	0.12	$1,207	48	52	634	290	344	($1,057)
Page Total		275					52.64	$53,316		224			17.46	$143,137			131,379	43,575	87,804	($89,820)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
R7	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
M1	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
M2	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
M3	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
M4	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
M5	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
Page Total		32					6.40	$7,964		22			2.06	$13,532			15,974	5,129	10,845	($5,568)
Building Tot		449					84.87	$98,506		344			27.14	$221,575			211,846	67,749	144,097	($123,069)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1*	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
*	F212	1	C	350	33	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
2	I200	5	C	400	37	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
3*	I200	2	C	630	59	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
*	F212	4	C	470	44	82	0.33	$223	F212	0		82	0.33	$223	48	52	819	819	0	$0
4	I200	14	B	370	34	200	2.80	$3,233	F312	9		132	1.19	$6,267	48	52	6,989	2,965	4,024	($3,034)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	8	C	270	25	132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
5	I200	6	B			200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
6	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	5	C			132	0.66	$314	F312	0		132	0.66	$314	48	52	1,647	1,647	0	$0
7	I200	6	B	270	25	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
8	I200	6	B			200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
9	F312	5	B	470	44	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
10	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
11	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
12	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
13	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
14	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
15	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
16	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
17	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
18	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
19	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
20	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
21	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
22	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
New Panel								$1,500												$1,500
Page Total		142					25.84	$37,226		71			10.88	$44,984			64,492	27,156	37,335	($7,759)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
23	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
24	I200	23	B	380	35	200	4.60	$5,599	F312	19		132	2.51	$13,231	48	52	11,482	6,260	5,222	($7,632)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	I200	14	C	510	47	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
25	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
26	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
27	I200	14	B	450	42	200	2.80	$3,233	F312	18		132	2.38	$12,534	48	52	6,989	5,930	1,058	($9,301)
	F312	3	B			132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
28	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
29	I200	6	B	430	40	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
30	I200	6	B	325	30	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
31	I200	6	B	450	42	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
32	I200	3	B	450	42	200	0.60	$788	F312	4		132	0.40	$2,089	48	52	1,498	988	509	($1,301)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
33	I200	6	B	300	28	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
34	I200	14	B	330	31	200	2.80	$3,233	F312	9		132	1.19	$6,267	48	52	6,989	2,965	4,024	($3,034)
	I200	14	C			200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
35	I200	13	C	185	17	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
36	I200	5	C	200	19	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
R1	I200	13	R			200	2.60	$518	MH70	13		89	1.16	$7,160	48	52	6,490	2,888	3,602	($6,642)
	MV10	14	L			127	1.78	$996	MH70	14		89	1.25	$7,711	48	52	4,438	3,110	1,328	($6,715)
R2	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
	I200	2	L			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
	MV10	4	L			127	0.51	$299	MH70	4		89	0.36	$2,203	48	52	1,268	889	379	($1,904)
R3	I200	9	R			200	1.80	$359	MH70	9		89	0.80	$4,957	48	52	4,493	1,999	2,494	($4,598)
	MV10	4	L			127	0.51	$299	MH70	4		89	0.36	$2,203	48	52	1,268	889	379	($1,904)
R4	I200	11	R			200	2.20	$439	MH70	11		89	0.98	$6,058	48	52	5,491	2,444	3,048	($5,620)
	I200	1	L			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
R5	I200	8	R			200	1.60	$319	MH70	8		89	0.71	$4,406	48	52	3,994	1,777	2,216	($4,087)
R6	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
	MV10	2	R			127	0.25	$149	MH70	2		89	0.18	$1,102	48	52	634	444	190	($952)
Page Total		275					52.64	$53,316		222			22.99	$132,440			131,379	57,381	73,999	($79,123)

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
R7	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
M1	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
M2	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
M3	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
M4	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
M5	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
Page Total		32					6.40	$7,964		22			1.96	$12,117			15,974	4,887	11,087	($4,153)
Building Tot		449					84.87	$98,506		315			35.83	$189,541			211,846	89,424	122,421	($91,035)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1*	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
*	F212	1	C	350	33	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
2	I200	5	C	400	37	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
3*	I200	2	C	630	59	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
*	F212	4	C	470	44	82	0.33	$223	F212	0		82	0.33	$223	48	52	819	819	0	$0
4	I200	14	B	370	34	200	2.80	$3,233	F312	4		132	1.19	$6,267	48	52	6,989	2,965	4,024	($3,034)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	8	C	270	25	132	1.06	$502	F312	0		132	1.06	$502	48	52	2,636	2,636	0	$0
5	I200	6	B			200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
6	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	5	C			132	0.66	$314	F312	0		132	0.66	$314	48	52	1,647	1,647	0	$0
7	I200	6	B	270	25	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
8	I200	6	B			200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
9	F312	5	B	470	44	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
10	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
11	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
12	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
13	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
14	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
15	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
16	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
17	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
18	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
19	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
20	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
21	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
22	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
New Panel								$1,500												$1,500
Page Total		142					25.84	$37,226		71			11.30	$47,763			64,492	28,205	36,287	($10,538)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
23	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
24	I200	23	B	380	35	200	4.60	$5,599	F312	19		132	2.51	$13,231	48	52	11,482	6,260	5,222	($7,632)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	I200	14	C	510	47	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
25	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
26	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
27	I200	14	B	450	42	200	2.80	$3,233	F312	16		132	2.38	$12,534	48	52	6,989	5,930	1,058	($9,301)
	F312	3	B			132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
28	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
29	I200	6	B	430	40	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
30	I200	6	B	325	30	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
31	I200	6	B	450	42	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
32	I200	3	B	450	42	200	0.60	$788	F312	3		132	0.40	$2,089	48	52	1,498	988	509	($1,301)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
33	I200	6	B	300	28	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
34	I200	14	B	330	31	200	2.80	$3,233	F312	9		132	1.19	$6,267	48	52	6,989	2,965	4,024	($3,034)
	I200	14	C			200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
35	I200	13	C	185	17	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
36	I200	5	C	200	19	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
R1	I200	13	R			200	2.60	$516	HP50	13		58	0.75	$7,843	48	52	6,490	1,882	4,608	($7,325)
	MV10	14	L			127	1.78	$996	HP70	14		99	1.39	$8,637	48	52	4,438	3,459	978	($7,641)
R2	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
	I200	2	L			200	0.40	$80	HP70	2		99	0.20	$1,234	48	52	998	494	504	($1,154)
	MV10	4	L			127	0.51	$299	HP70	4		99	0.40	$2,468	48	52	1,268	988	280	($2,169)
R3	I200	9	R			200	1.80	$359	HP50	9		58	0.52	$5,430	48	52	4,493	1,303	3,190	($5,071)
	MV10	4	L			127	0.51	$299	HP70	4		99	0.40	$2,468	48	52	1,268	988	280	($2,169)
R4	I200	11	R			200	2.20	$439	HP50	11		58	0.64	$6,636	48	52	5,491	1,592	3,899	($6,198)
	I200	1	L			200	0.20	$40	HP70	1		99	0.10	$617	48	52	499	247	252	($577)
R5	I200	8	R			200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,158	2,835	($4,508)
R6	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
	MV10	2	R			127	0.25	$149	HP50	2		58	0.12	$1,207	48	52	634	290	344	($1,057)
Page Total		275					52.64	$53,316		222			22.43	$141,869			131,379	55,980	75,399	($88,553)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
R7	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
M1	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
M2	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
M3	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
M4	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
M5	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
Page Total		32					6.40	$7,964		22			2.06	$13,532			15,974	5,129	10,845	($5,568)
Building Tot		449					84.87	$98,506		315			35.78	$203,164			211,846	89,314	122,531	($104,658)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1*	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
*	F212	1	C	350	33	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
2	I200	5	C	400	37	200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
3*	I200	2	C	630	59	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
*	F212	4	C	470	44	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
4	I200	14	B	370	34	200	2.80	$3,233	F208	5		62	0.56	$6,267	48	52	6,989	1,393	5,596	($3,034)
	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F312	8	C	270	25	132	1.06	$502	F208	8		62	0.50	$5,571	48	52	2,636	1,238	1,398	($5,069)
5	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
6	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F312	5	C			132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
7	I200	6	B	270	25	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
8	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
9	F312	5	B	470	44	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
10	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
11	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
12	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
13	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
14	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
15	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
16	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
17	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
18	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
19	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
20	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
21	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
22	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
New Panel								$1,500												$1,500
Page Total		142					25.84	$37,226		98			5.91	$64,335			64,492	14,746	49,745	($27,109)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
23	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
24	I200	23	B	380	35	200	4.60	$5,599	F208	19		62	1.18	$13,231	48	52	11,482	2,940	8,541	($7,632)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	14	C	510	47	200	2.80	$3,233	HP50	10		58	0.58	$6,033	48	52	6,989	1,448	5,541	($2,800)
25	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
26	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
27	I200	14	B	450	42	200	2.80	$3,233	F208	16		62	1.12	$12,534	48	52	6,989	2,786	4,203	($9,301)
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
28	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
29	I200	6	B	430	40	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
30	I200	6	B	325	30	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
31	I200	6	B	450	42	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
32	I200	3	B	450	42	200	0.60	$788	F208	3		62	0.19	$2,089	48	52	1,498	464	1,033	($1,301)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
33	I200	6	B	300	28	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
34	I200	14	B	330	31	200	2.80	$3,233	F208	9		62	0.56	$6,267	48	52	6,989	1,393	5,596	($3,034)
	I200	14	C			200	2.80	$3,233	HP50	10		58	0.58	$6,033	48	52	6,989	1,448	5,541	($2,800)
35	I200	13	C	185	17	200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
36	I200	5	C	200	19	200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
R1	I200	13	R			200	2.60	$518	HP50	13		58	0.75	$7,843	48	52	6,490	1,882	4,608	($7,325)
	MV10	14	L			127	1.78	$996	HP50	14		58	0.81	$8,446	48	52	4,438	2,027	2,411	($7,450)
R2	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
	I200	2	L			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
	MV10	4	L			127	0.51	$299	HP50	4		58	0.23	$2,413	48	52	1,268	579	689	($2,115)
R3	I200	9	R			200	1.80	$359	HP50	9		58	0.52	$5,430	48	52	4,493	1,303	3,190	($5,071)
	MV10	4	L			127	0.51	$299	HP50	4		58	0.23	$2,413	48	52	1,268	579	689	($2,115)
R4	I200	11	R			200	2.20	$439	HP50	11		58	0.64	$6,636	48	52	5,491	1,592	3,899	($6,198)
	I200	1	L			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
R5	I200	8	R			200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,158	2,835	($4,508)
R6	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
	MV10	2	R			127	0.25	$149	HP50	2		58	0.12	$1,207	48	52	634	290	344	($1,057)
Page Total		275					52.64	$53,316		224			13.28	$141,747			131,379	33,137	98,243	($88,431)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
R7	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
M1	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
M2	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
M3	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
M4	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
M5	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
Page Total		32					6.40	$7,964		22			1.28	$13,273			15,974	3,185	12,790	($5,309)
Building Tot		449					84.87	$98,506		344			20.46	$219,355			211,846	51,068	160,777	($120,849)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1*	I200	2	C	19	11.5	219	8.38	30%	30%	20%	0.176	1	3400	6800	0.86	4.74
*	F212	1	C	19	11.5	219	8.38	30%	30%	20%						
2	I200	5	C	19	7	133	11.73	30%	30%	20%	0.140	1	3400	17000	0.86	15.47
3*	I200	2	C	20	19	380	6.16	30%	30%	20%	0.232	1	3400	6800	0.86	3.59
*	F212	4	C	20	19	380	6.16	30%	30%	20%						
4	I200	14	B	39	24	936	1.68	30%	10%	20%	0.425	1	3400	47600	0.86	18.68
	I200	6	C	39	24	936	4.04	30%	30%	20%	0.306	1	3400	20400	0.86	5.77
	F312	8	C	39	24	936	4.04	30%	30%	20%						
5	I200	6	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	20400	0.86	14.23
	I200	2	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	6800	0.86	3.17
	F312	3	C	24	19	456	5.66	30%	30%	20%						
6	I200	5	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	17000	0.86	11.86
	F312	2	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	15420	0.92	15.21
	I200	5	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	17000	0.86	7.93
	F312	5	C	24	19	456	5.66	30%	30%	20%						
7	I200	6	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	20400	0.86	14.23
	I200	3	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	10200	0.86	4.76
	F312	2	C	24	19	456	5.66	30%	30%	20%						
8	I200	6	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	20400	0.86	14.23
	I200	7	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	23800	0.86	11.10
9	F312	5	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	38550	0.92	38.02
	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
10	I200	6	C	18	15	270	7.33	30%	30%	20%	0.200	1	3400	20400	0.86	13.06
	F312	3	C	18	15	270	7.33	30%	30%	20%						
11	I200	2	C	79	5	395	12.76	30%	30%	20%	0.140	1	3400	6800	0.86	2.08
12	I200	5	C	9	6	54	16.67	30%	30%	20%	0.140	1	3400	17000	0.86	38.10
	F312	1	C	9	6	54	16.67	30%	30%	20%						
13	I200	2	C	9	6	54	16.67	30%	30%	20%	0.140	1	3400	6800	0.86	15.24
14	I200	2	C	9	6	54	16.67	30%	30%	20%	0.140	1	3400	6800	0.86	15.24
15	I200	2	C	9	6	54	16.67	30%	30%	20%	0.140	1	3400	6800	0.86	15.24
16	I200	2	C	9	6	54	16.67	30%	30%	20%	0.140	1	3400	6800	0.86	15.24
17	I200	2	C	9	5.5	50	17.58	30%	30%	20%	0.140	1	3400	6800	0.86	16.63
18	I200	2	C	9	5.5	50	17.58	30%	30%	20%	0.140	1	3400	6800	0.86	16.63
19	I200	2	C	9	5	45	18.67	30%	30%	20%	0.140	1	3400	6800	0.86	18.29
20	I200	2	C	9	5	45	18.67	30%	30%	20%	0.140	1	3400	6800	0.86	18.29
21	I200	2	C	9	5.5	50	17.58	30%	30%	20%	0.140	1	3400	6800	0.86	16.63
22	I200	2	C	9	5.5	50	17.58	30%	30%	20%	0.140	1	3400	6800	0.86	16.63

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	I200	2	C	9	7	63	15.24	30%	30%	20%	0.140	1	3400	6800	0.86	13.06
24	I200	23	B	98	13	1274	2.18	30%	10%	20%	0.380	1	3400	78200	0.86	20.16
	F312	2	B	98	13	1274	2.18	30%	10%	20%	0.499	3	2570	15420	0.92	5.57
	I200	14	C	98	13	1274	5.23	30%	30%	20%	0.259	1	3400	47600	0.86	8.37
25	I200	7	C	33	17	561	5.35	30%	30%	20%	0.256	1	3400	23800	0.86	9.39
26	I200	10	C	33	17	561	5.35	30%	30%	20%	0.256	1	3400	34000	0.86	13.41
27	I200	14	B	98	16	1568	1.82	30%	10%	20%	0.410	1	3400	47600	0.86	10.76
	F312	3	B	98	16	1568	1.82	30%	10%	20%	0.410	3	2570	23130	0.92	5.57
	I200	5	C	98	16	1568	4.36	30%	30%	20%	0.293	1	3400	17000	0.86	2.75
	F312	2	C	98	16	1568	4.36	30%	30%	20%						
28	I200	10	C	100	8	800	8.10	30%	30%	20%	0.181	1	3400	34000	0.86	6.65
29	I200	6	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	20400	0.86	14.23
	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
30	I200	6	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	20400	0.86	14.23
	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
31	I200	6	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	20400	0.86	14.23
	I200	7	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	23800	0.86	11.10
32	I200	3	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	10200	0.86	7.12
	F312	2	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	15420	0.92	15.21
	I200	7	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	23800	0.86	11.10
33	I200	6	B	24	19	456	2.36	30%	10%	20%	0.368	1	3400	20400	0.86	14.23
	I200	6	C	24	19	456	5.66	30%	30%	20%	0.246	1	3400	20400	0.86	9.51
34	I200	14	B	39	24	936	1.68	30%	10%	20%	0.425	1	3400	47600	0.86	18.68
	I200	14	C	39	24	936	4.04	30%	30%	20%	0.306	1	3400	47600	0.86	13.45
35	I200	13	C	28	25	700	4.54	30%	30%	20%	0.285	1	3400	44200	0.86	15.56
36	I200	5	C	28	13	364	6.76	30%	30%	20%	0.215	1	3400	17000	0.86	8.68
R1	I200	13	R	276	8	2208	3.22	30%	30%	20%	0.349	1	3400	44200	0.86	6.04
	MV10	14	L	276	8	2208	3.22	30%	30%	20%	0.349	1	2800	39200	0.81	4.99
R2	I200	4	R	110	8	880	3.35	30%	30%	20%	0.342	1	3400	13600	0.86	4.57
	I200	2	L	110	8	880	3.35	30%	30%	20%	0.342	1	3400	6800	0.86	2.28
	MV10	4	L	110	8	880	3.35	30%	30%	20%	0.342	1	2800	11200	0.81	3.50
R3	I200	9	R	175	8	1400	3.27	30%	30%	20%	0.347	1	3400	30600	0.86	6.56
	MV10	4	L	175	8	1400	3.27	30%	30%	20%	0.347	1	2800	11200	0.81	2.23
R4	I200	11	R	180	8	1440	3.26	30%	30%	20%	0.347	1	3400	37400	0.86	7.79
	I200	1	L	180	8	1440	3.26	30%	30%	20%	0.347	1	3400	3400	0.86	0.71
R5	I200	8	R	40	8	320	3.75	30%	30%	20%	0.321	1	3400	27200	0.86	23.59
R6	I200	4	R	100	8	800	3.38	30%	30%	20%	0.341	1	3400	13600	0.86	5.01
	MV10	2	R	100	8	800	3.38	30%	30%	20%	0.341	1	2800	5600	0.81	1.92

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
R7	I200	3	R	50	8	400	3.63	30%	30%	20%	0.328	1	3400	10200	0.86	7.23
M1	I200	5	C	19	16	304	6.91	30%	30%	20%	0.211	1	3400	17000	0.86	10.20
M2	I200	5	C	19	16	304	6.91	30%	30%	20%	0.211	1	3400	17000	0.86	10.20
M3	I200	5	C	19	16	304	6.91	30%	30%	20%	0.211	1	3400	17000	0.86	10.20
M4	I200	7	C	19	16	304	6.91	30%	30%	20%	0.211	1	3400	23800	0.86	14.28
M5	I200	7	C	19	16	304	6.91	30%	30%	20%	0.211	1	3400	23800	0.86	14.28

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1*	MH70	1	C	19	11.5	219	8.38	30%	30%	20%	0.146	1	4000	4000	0.90	2.41
*	F208	1	C	19	11.5	219	8.38	30%	30%	20%						
2	MH70	3	C	19	7	133	11.73	30%	30%	20%	0.115	1	4000	12000	0.90	9.36
3*	MH70	1	C	20	19	380	6.16	30%	30%	20%	0.195	1	4000	4000	0.90	1.85
*	F208	4	C	20	19	380	6.16	30%	30%	20%						
4	F208	9	B	39	24	936	1.68	30%	10%	20%	0.606	2	2650	47700	0.92	28.46
	MH70	4	C	39	24	936	4.04	30%	30%	20%	0.264	1	4000	16000	0.90	4.07
	F208	8	C	39	24	936	4.04	30%	30%	20%						
5	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	F208	3	C	24	19	456	5.66	30%	30%	20%						
6	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
	F208	5	C	24	19	456	5.66	30%	30%	20%						
7	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F208	2	C	24	19	456	5.66	30%	30%	20%						
8	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	MH70	5	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	20000	0.90	8.27
9	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
10	MH70	4	C	18	15	270	7.33	30%	30%	20%	0.167	1	4000	16000	0.90	8.93
	F208	3	C	18	15	270	7.33	30%	30%	20%						
11	MH70	1	C	79	5	395	12.76	30%	30%	20%	0.115	1	4000	4000	0.90	1.05
12	MH70	3	C	9	6	54	16.67	30%	30%	20%	0.115	1	4000	12000	0.90	23.05
	F208	1	C	9	6	54	16.67	30%	30%	20%						
13	MH70	1	C	9	6	54	16.67	30%	30%	20%	0.115	1	4000	4000	0.90	7.68
14	MH70	1	C	9	6	54	16.67	30%	30%	20%	0.115	1	4000	4000	0.90	7.68
15	MH70	1	C	9	6	54	16.67	30%	30%	20%	0.115	1	4000	4000	0.90	7.68
16	MH70	1	C	9	6	54	16.67	30%	30%	20%	0.115	1	4000	4000	0.90	7.68
17	MH70	1	C	9	5.5	50	17.58	30%	30%	20%	0.115	1	4000	4000	0.90	8.38
18	MH70	1	C	9	5.5	50	17.58	30%	30%	20%	0.115	1	4000	4000	0.90	8.38
19	MH70	1	C	9	5	45	18.67	30%	30%	20%	0.115	1	4000	4000	0.90	9.22
20	MH70	1	C	9	5	45	18.67	30%	30%	20%	0.115	1	4000	4000	0.90	9.22
21	MH70	1	C	9	5.5	50	17.58	30%	30%	20%	0.115	1	4000	4000	0.90	8.38
22	MH70	1	C	9	5.5	50	17.58	30%	30%	20%	0.115	1	4000	4000	0.90	8.38

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
24	F208	19	B	98	13	1274	2.18	30%	10%	20%	0.569	2	2650	100700	0.92	41.45
	F208	1	B	98	13	1274	2.18	30%	10%	20%	0.569	2	2650	5300	0.92	2.18
	MH70	10	C	98	13	1274	5.23	30%	30%	20%	0.221	1	4000	40000	0.90	6.26
25	MH70	5	C	33	17	561	5.35	30%	30%	20%	0.217	1	4000	20000	0.90	6.98
26	MH70	7	C	33	17	561	5.35	30%	30%	20%	0.217	1	4000	28000	0.90	9.77
27	F208	18	B	98	16	1568	1.82	30%	10%	20%	0.594	2	2650	95400	0.92	33.31
	F208	2	B	98	16	1568	1.82	30%	10%	20%	0.594	2	2650	10600	0.92	3.70
	MH70	3	C	98	16	1568	4.36	30%	30%	20%	0.252	1	4000	12000	0.90	1.74
	F208	2	C	98	16	1568	4.36	30%	30%	20%						
28	MH70	7	C	100	8	800	8.10	30%	30%	20%	0.150	1	4000	28000	0.90	4.74
29	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
30	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
31	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	MH70	5	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	20000	0.90	8.27
32	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
	MH70	5	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	20000	0.90	8.27
33	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
34	F208	9	B	39	24	936	1.68	30%	10%	20%	0.606	2	2650	47700	0.92	28.46
	MH70	10	C	39	24	936	4.04	30%	30%	20%	0.264	1	4000	40000	0.90	10.18
35	MH70	9	C	28	25	700	4.54	30%	30%	20%	0.245	1	4000	36000	0.90	11.37
36	MH70	3	C	28	13	364	6.76	30%	30%	20%	0.180	1	4000	12000	0.90	5.35
R1	MH70	13	R	276	8	2208	3.22	30%	30%	20%	0.306	1	4000	52000	0.90	6.50
	MH70	14	L	276	8	2208	3.22	30%	30%	20%	0.306	1	4000	56000	0.90	7.00
R2	MH70	4	R	110	8	880	3.35	30%	30%	20%	0.299	1	4000	16000	0.90	4.90
	MH70	2	L	110	8	880	3.35	30%	30%	20%	0.299	1	4000	8000	0.90	2.45
	MH70	4	L	110	8	880	3.35	30%	30%	20%	0.299	1	4000	16000	0.90	4.90
R3	MH70	9	R	175	8	1400	3.27	30%	30%	20%	0.303	1	4000	36000	0.90	7.03
	MH70	4	L	175	8	1400	3.27	30%	30%	20%	0.303	1	4000	16000	0.90	3.12
R4	MH70	11	R	180	8	1440	3.26	30%	30%	20%	0.304	1	4000	44000	0.90	8.38
	MH70	1	L	180	8	1440	3.26	30%	30%	20%	0.304	1	4000	4000	0.90	0.76
R5	MH70	8	R	40	8	320	3.75	30%	30%	20%	0.279	1	4000	32000	0.90	25.17
R6	MH70	4	R	100	8	800	3.38	30%	30%	20%	0.298	1	4000	16000	0.90	5.38
	MH70	2	R	100	8	800	3.38	30%	30%	20%	0.298	1	4000	8000	0.90	2.69

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
R7	MH70	3	R	50	8	400	3.63	30%	30%	20%	0.285	1	4000	12000	0.90	7.71
M1	MH70	3	C	19	16	304	6.91	30%	30%	20%	0.176	1	4000	12000	0.90	6.27
M2	MH70	3	C	19	16	304	6.91	30%	30%	20%	0.176	1	4000	12000	0.90	6.27
M3	MH70	3	C	19	16	304	6.91	30%	30%	20%	0.176	1	4000	12000	0.90	6.27
M4	MH70	5	C	19	16	304	6.91	30%	30%	20%	0.176	1	4000	20000	0.90	10.45
M5	MH70	5	C	19	16	304	6.91	30%	30%	20%	0.176	1	4000	20000	0.90	10.45

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1*	HP70	1	C	19	11.5	219	8.38	30%	30%	20%	0.227	1	5450	5450	0.94	5.33
*	F208	1	C	19	11.5	219	8.38	30%	30%	20%						
2	HP70	3	C	19	7	133	11.73	30%	30%	20%	0.178	1	5450	16350	0.94	20.59
3*	HP70	1	C	20	19	380	6.16	30%	30%	20%	0.306	1	5450	5450	0.94	4.13
*	F208	4	C	20	19	380	6.16	30%	30%	20%						
4	F208	9	B	39	24	936	1.68	30%	10%	20%	0.606	2	2650	47700	0.92	28.46
	HP70	4	C	39	24	936	4.04	30%	30%	20%	0.417	1	5450	21800	0.94	9.14
	F208	8	C	39	24	936	4.04	30%	30%	20%						
5	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	F208	3	C	24	19	456	5.66	30%	30%	20%						
6	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
	F208	5	C	24	19	456	5.66	30%	30%	20%						
7	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F208	2	C	24	19	456	5.66	30%	30%	20%						
8	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP70	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	27250	0.94	18.39
9	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
10	HP70	4	C	18	15	270	7.33	30%	30%	20%	0.260	1	5450	21800	0.94	19.75
	F208	3	C	18	15	270	7.33	30%	30%	20%						
11	HP70	1	C	79	5	395	12.76	30%	30%	20%	0.178	1	5450	5450	0.94	2.31
12	HP70	3	C	9	6	54	16.67	30%	30%	20%	0.178	1	5450	16350	0.94	50.71
	F208	1	C	9	6	54	16.67	30%	30%	20%						
13	HP70	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	5450	5450	0.94	16.90
14	HP70	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	5450	5450	0.94	16.90
15	HP70	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	5450	5450	0.94	16.90
16	HP70	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	5450	5450	0.94	16.90
17	HP70	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	5450	5450	0.94	18.44
18	HP70	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	5450	5450	0.94	18.44
19	HP70	1	C	9	5	45	18.67	30%	30%	20%	0.178	1	5450	5450	0.94	20.28
20	HP70	1	C	9	5	45	18.67	30%	30%	20%	0.178	1	5450	5450	0.94	20.28
21	HP70	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	5450	5450	0.94	18.44
22	HP70	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	5450	5450	0.94	18.44

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
24	F208	19	B	98	13	1274	2.18	30%	10%	20%	0.569	2	2650	100700	0.92	41.45
	F208	1	B	98	13	1274	2.18	30%	10%	20%	0.569	2	2650	5300	0.92	2.18
	HP70	10	C	98	13	1274	5.23	30%	30%	20%	0.347	1	5450	54500	0.94	13.97
25	HP70	5	C	33	17	561	5.35	30%	30%	20%	0.341	1	5450	27250	0.94	15.58
26	HP70	7	C	33	17	561	5.35	30%	30%	20%	0.341	1	5450	38150	0.94	21.82
27	F208	18	B	98	16	1568	1.82	30%	10%	20%	0.594	2	2650	95400	0.92	33.31
	F208	2	B	98	16	1568	1.82	30%	10%	20%	0.594	2	2650	10600	0.92	3.70
	HP70	3	C	98	16	1568	4.36	30%	30%	20%	0.397	1	5450	16350	0.94	3.89
	F208	2	C	98	16	1568	4.36	30%	30%	20%						
28	HP70	7	C	100	8	800	8.10	30%	30%	20%	0.234	1	5450	38150	0.94	10.50
29	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
30	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
31	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP70	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	27250	0.94	18.39
32	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
	HP70	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	27250	0.94	18.39
33	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
34	F208	9	B	39	24	936	1.68	30%	10%	20%	0.606	2	2650	47700	0.92	28.46
	HP70	10	C	39	24	936	4.04	30%	30%	20%	0.417	1	5450	54500	0.94	22.85
35	HP70	9	C	28	25	700	4.54	30%	30%	20%	0.386	1	5450	49050	0.94	25.45
36	HP70	3	C	28	13	364	6.76	30%	30%	20%	0.282	1	5450	16350	0.94	11.92
R1	HP50	13	R	276	8	2208	3.22	30%	30%	20%	0.480	1	3600	46800	0.94	9.57
	HP70	14	L	276	8	2208	3.22	30%	30%	20%	0.480	1	5450	76300	0.94	15.61
R2	HP50	4	R	110	8	880	3.35	30%	30%	20%	0.470	1	3600	14400	0.94	7.24
	HP70	2	L	110	8	880	3.35	30%	30%	20%	0.470	1	5450	10900	0.94	5.48
	HP70	4	L	110	8	880	3.35	30%	30%	20%	0.470	1	5450	21800	0.94	10.96
R3	HP50	9	R	175	8	1400	3.27	30%	30%	20%	0.476	1	3600	32400	0.94	10.36
	HP70	4	L	175	8	1400	3.27	30%	30%	20%	0.476	1	5450	21800	0.94	6.97
R4	HP50	11	R	180	8	1440	3.26	30%	30%	20%	0.477	1	3600	39600	0.94	12.34
	HP70	1	L	180	8	1440	3.26	30%	30%	20%	0.477	1	5450	5450	0.94	1.70
R5	HP50	8	R	40	8	320	3.75	30%	30%	20%	0.439	1	3600	28800	0.94	37.17
R6	HP50	4	R	100	8	800	3.38	30%	30%	20%	0.467	1	3600	14400	0.94	7.91
	HP50	2	R	100	8	800	3.38	30%	30%	20%	0.467	1	3600	7200	0.94	3.95

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F	
R7	HP50	3	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	10800	0.94	11.38
M1	HP70	3	C	19	16	304	6.91	30%	30%	20%	0.276	1	5450	16350	0.94	13.97
M2	HP70	3	C	19	16	304	6.91	30%	30%	20%	0.276	1	5450	16350	0.94	13.97
M3	HP70	3	C	19	16	304	6.91	30%	30%	20%	0.276	1	5450	16350	0.94	13.97
M4	HP70	5	C	19	16	304	6.91	30%	30%	20%	0.276	1	5450	27250	0.94	23.28
M5	HP70	5	C	19	16	304	6.91	30%	30%	20%	0.276	1	5450	27250	0.94	23.28

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1*	MH70	1	C	19	11.5	219	8.38	30%	30%	20%	0.146	1	4000	4000	0.90	2.41
*	F212	1	C	19	11.5	219	8.38	30%	30%	20%						
2	MH70	3	C	19	7	133	11.73	30%	30%	20%	0.115	1	4000	12000	0.90	9.36
3*	MH70	1	C	20	19	380	6.16	30%	30%	20%	0.195	1	4000	4000	0.90	1.85
*	F212	4	C	20	19	380	6.16	30%	30%	20%						
4	F312	9	B	39	24	936	1.68	30%	10%	20%	0.535	3	2570	69390	0.92	36.55
	MH70	4	C	39	24	936	4.04	30%	30%	20%	0.264	1	4000	16000	0.90	4.07
	F312	8	C	39	24	936	4.04	30%	30%	20%						
5	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	MH70	1	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	4000	0.90	1.65
	F312	3	C	24	19	456	5.66	30%	30%	20%						
6	F312	3	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	23130	0.92	22.81
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
	MH70	3	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	12000	0.90	4.96
	F312	5	C	24	19	456	5.66	30%	30%	20%						
7	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	MH70	2	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	8000	0.90	3.31
	F312	2	C	24	19	456	5.66	30%	30%	20%						
8	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	MH70	5	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	20000	0.90	8.27
9	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
10	MH70	4	C	18	15	270	7.33	30%	30%	20%	0.167	1	4000	16000	0.90	8.93
	F312	3	C	18	15	270	7.33	30%	30%	20%						
11	MH70	1	C	79	5	395	12.76	30%	30%	20%	0.115	1	4000	4000	0.90	1.05
12	MH70	3	C	9	6	54	16.67	30%	30%	20%	0.115	1	4000	12000	0.90	23.05
	F312	1	C	9	6	54	16.67	30%	30%	20%						
13	MH70	1	C	9	6	54	16.67	30%	30%	20%	0.115	1	4000	4000	0.90	7.68
14	MH70	1	C	9	6	54	16.67	30%	30%	20%	0.115	1	4000	4000	0.90	7.68
15	MH70	1	C	9	6	54	16.67	30%	30%	20%	0.115	1	4000	4000	0.90	7.68
16	MH70	1	C	9	6	54	16.67	30%	30%	20%	0.115	1	4000	4000	0.90	7.68
17	MH70	1	C	9	5.5	50	17.58	30%	30%	20%	0.115	1	4000	4000	0.90	8.38
18	MH70	1	C	9	5.5	50	17.58	30%	30%	20%	0.115	1	4000	4000	0.90	8.38
19	MH70	1	C	9	5	45	18.67	30%	30%	20%	0.115	1	4000	4000	0.90	9.22
20	MH70	1	C	9	5	45	18.67	30%	30%	20%	0.115	1	4000	4000	0.90	9.22
21	MH70	1	C	9	5.5	50	17.58	30%	30%	20%	0.115	1	4000	4000	0.90	8.38
22	MH70	1	C	9	5.5	50	17.58	30%	30%	20%	0.115	1	4000	4000	0.90	8.38

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
24	F312	19	B	98	13	1274	2.18	30%	10%	20%	0.499	3	2570	146490	0.92	52.88
	F312	1	B	98	13	1274	2.18	30%	10%	20%	0.499	3	2570	7710	0.92	2.78
	MH70	10	C	98	13	1274	5.23	30%	30%	20%	0.221	1	4000	40000	0.90	6.26
25	MH70	5	C	33	17	561	5.35	30%	30%	20%	0.217	1	4000	20000	0.90	6.98
26	MH70	7	C	33	17	561	5.35	30%	30%	20%	0.217	1	4000	28000	0.90	9.77
27	F312	18	B	98	16	1568	1.82	30%	10%	20%	0.525	3	2570	138780	0.92	42.82
	F312	2	B	98	16	1568	1.82	30%	10%	20%	0.525	3	2570	15420	0.92	4.76
	MH70	3	C	98	16	1568	4.36	30%	30%	20%	0.252	1	4000	12000	0.90	1.74
	F312	2	C	98	16	1568	4.36	30%	30%	20%						
28	MH70	7	C	100	8	800	8.10	30%	30%	20%	0.150	1	4000	28000	0.90	4.74
29	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
30	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
31	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	MH70	5	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	20000	0.90	8.27
32	F312	3	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	23130	0.92	22.81
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
	MH70	5	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	20000	0.90	8.27
33	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	MH70	4	C	24	19	456	5.66	30%	30%	20%	0.209	1	4000	16000	0.90	6.62
34	F312	9	B	39	24	936	1.68	30%	10%	20%	0.535	3	2570	69390	0.92	36.55
	MH70	10	C	39	24	936	4.04	30%	30%	20%	0.264	1	4000	40000	0.90	10.18
35	MH70	9	C	28	25	700	4.54	30%	30%	20%	0.245	1	4000	36000	0.90	11.37
36	MH70	3	C	28	13	364	6.76	30%	30%	20%	0.180	1	4000	12000	0.90	5.35
R1	MH70	13	R	276	8	2208	3.22	30%	30%	20%	0.306	1	4000	52000	0.90	6.50
	MH70	14	L	276	8	2208	3.22	30%	30%	20%	0.306	1	4000	56000	0.90	7.00
R2	MH70	4	R	110	8	880	3.35	30%	30%	20%	0.299	1	4000	16000	0.90	4.90
	MH70	2	L	110	8	880	3.35	30%	30%	20%	0.299	1	4000	8000	0.90	2.45
	MH70	4	L	110	8	880	3.35	30%	30%	20%	0.299	1	4000	16000	0.90	4.90
R3	MH70	9	R	175	8	1400	3.27	30%	30%	20%	0.303	1	4000	36000	0.90	7.03
	MH70	4	L	175	8	1400	3.27	30%	30%	20%	0.303	1	4000	16000	0.90	3.12
R4	MH70	11	R	180	8	1440	3.26	30%	30%	20%	0.304	1	4000	44000	0.90	8.38
	MH70	1	L	180	8	1440	3.26	30%	30%	20%	0.304	1	4000	4000	0.90	0.76
R5	MH70	8	R	40	8	320	3.75	30%	30%	20%	0.279	1	4000	32000	0.90	25.17
R6	MH70	4	R	100	8	800	3.38	30%	30%	20%	0.298	1	4000	16000	0.90	5.38
	MH70	2	R	100	8	800	3.38	30%	30%	20%	0.298	1	4000	8000	0.90	2.69

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
R7	MH70	3	R	50	8	400	3.63	30%	30%	20%	0.285	1	4000	12000	0.90	7.71
M1	MH70	3	C	19	16	304	6.91	30%	30%	20%	0.176	1	4000	12000	0.90	6.27
M2	MH70	3	C	19	16	304	6.91	30%	30%	20%	0.176	1	4000	12000	0.90	6.27
M3	MH70	3	C	19	16	304	6.91	30%	30%	20%	0.176	1	4000	12000	0.90	6.27
M4	MH70	5	C	19	16	304	6.91	30%	30%	20%	0.176	1	4000	20000	0.90	10.45
M5	MH70	5	C	19	16	304	6.91	30%	30%	20%	0.176	1	4000	20000	0.90	10.45

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1*	HP70	1	C	19	11.5	219	8.38	30%	30%	20%	0.227	1	5450	5450	0.94	5.33
*	F212	1	C	19	11.5	219	8.38	30%	30%	20%						
2	HP70	3	C	19	7	133	11.73	30%	30%	20%	0.178	1	5450	16350	0.94	20.59
3*	HP70	1	C	20	19	380	6.16	30%	30%	20%	0.306	1	5450	5450	0.94	4.13
*	F212	4	C	20	19	380	6.16	30%	30%	20%						
4	F312	9	B	39	24	936	1.68	30%	10%	20%	0.535	3	2570	69390	0.92	36.55
	HP70	4	C	39	24	936	4.04	30%	30%	20%	0.417	1	5450	21800	0.94	9.14
	F312	8	C	39	24	936	4.04	30%	30%	20%						
5	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	HP70	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	5450	0.94	3.68
	F312	3	C	24	19	456	5.66	30%	30%	20%						
6	F312	3	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	23130	0.92	22.81
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
	HP70	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	16350	0.94	11.03
	F312	5	C	24	19	456	5.66	30%	30%	20%						
7	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	HP70	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	10900	0.94	7.35
	F312	2	C	24	19	456	5.66	30%	30%	20%						
8	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	HP70	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	27250	0.94	18.39
9	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
10	HP70	4	C	18	15	270	7.33	30%	30%	20%	0.260	1	5450	21800	0.94	19.75
	F312	3	C	18	15	270	7.33	30%	30%	20%						
11	HP70	1	C	79	5	395	12.76	30%	30%	20%	0.178	1	5450	5450	0.94	2.31
12	HP70	3	C	9	6	54	16.67	30%	30%	20%	0.178	1	5450	16350	0.94	50.71
	F312	1	C	9	6	54	16.67	30%	30%	20%						
13	HP70	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	5450	5450	0.94	16.90
14	HP70	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	5450	5450	0.94	16.90
15	HP70	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	5450	5450	0.94	16.90
16	HP70	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	5450	5450	0.94	16.90
17	HP70	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	5450	5450	0.94	18.44
18	HP70	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	5450	5450	0.94	18.44
19	HP70	1	C	9	5	45	18.67	30%	30%	20%	0.178	1	5450	5450	0.94	20.28
20	HP70	1	C	9	5	45	18.67	30%	30%	20%	0.178	1	5450	5450	0.94	20.28
21	HP70	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	5450	5450	0.94	18.44
22	HP70	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	5450	5450	0.94	18.44

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
24	F312	19	B	98	13	1274	2.18	30%	10%	20%	0.499	3	2570	146490	0.92	52.88
	F312	1	B	98	13	1274	2.18	30%	10%	20%	0.499	3	2570	7710	0.92	2.78
	HP70	10	C	98	13	1274	5.23	30%	30%	20%	0.347	1	5450	54500	0.94	13.97
25	HP70	5	C	33	17	561	5.35	30%	30%	20%	0.341	1	5450	27250	0.94	15.58
26	HP70	7	C	33	17	561	5.35	30%	30%	20%	0.341	1	5450	38150	0.94	21.82
27	F312	18	B	98	16	1568	1.82	30%	10%	20%	0.525	3	2570	138780	0.92	42.82
	F312	2	B	98	16	1568	1.82	30%	10%	20%	0.525	3	2570	15420	0.92	4.76
	HP70	3	C	98	16	1568	4.36	30%	30%	20%	0.397	1	5450	16350	0.94	3.89
	F312	2	C	98	16	1568	4.36	30%	30%	20%						
28	HP70	7	C	100	8	800	8.10	30%	30%	20%	0.234	1	5450	38150	0.94	10.50
29	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
30	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
31	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	HP70	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	27250	0.94	18.39
32	F312	3	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	23130	0.92	22.81
	F312	1	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	7710	0.92	7.60
	HP70	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	27250	0.94	18.39
33	F312	4	B	24	19	456	2.36	30%	10%	20%	0.488	3	2570	30840	0.92	30.42
	HP70	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	5450	21800	0.94	14.71
34	F312	9	B	39	24	936	1.68	30%	10%	20%	0.535	3	2570	69390	0.92	36.55
	HP70	10	C	39	24	936	4.04	30%	30%	20%	0.417	1	5450	54500	0.94	22.85
35	HP70	9	C	28	25	700	4.54	30%	30%	20%	0.386	1	5450	49050	0.94	25.45
36	HP70	3	C	28	13	364	6.76	30%	30%	20%	0.282	1	5450	16350	0.94	11.92
R1	HP50	13	R	276	8	2208	3.22	30%	30%	20%	0.480	1	3600	46800	0.94	9.57
	HP70	14	L	276	8	2208	3.22	30%	30%	20%	0.480	1	5450	76300	0.94	15.61
R2	HP50	4	R	110	8	880	3.35	30%	30%	20%	0.470	1	3600	14400	0.94	7.24
	HP70	2	L	110	8	880	3.35	30%	30%	20%	0.470	1	5450	10900	0.94	5.48
	HP70	4	L	110	8	880	3.35	30%	30%	20%	0.470	1	5450	21800	0.94	10.96
R3	HP50	9	R	175	8	1400	3.27	30%	30%	20%	0.476	1	3600	32400	0.94	10.36
	HP70	4	L	175	8	1400	3.27	30%	30%	20%	0.476	1	5450	21800	0.94	6.97
R4	HP50	11	R	180	8	1440	3.26	30%	30%	20%	0.477	1	3600	39600	0.94	12.34
	HP70	1	L	180	8	1440	3.26	30%	30%	20%	0.477	1	5450	5450	0.94	1.70
R5	HP50	8	R	40	8	320	3.75	30%	30%	20%	0.439	1	3600	28800	0.94	37.17
R6	HP50	4	R	100	8	800	3.38	30%	30%	20%	0.467	1	3600	14400	0.94	7.91
	HP50	2	R	100	8	800	3.38	30%	30%	20%	0.467	1	3600	7200	0.94	3.95

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
R7	HP50	3	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	10800	0.94	11.38
M1	HP70	3	C	19	16	304	6.91	30%	30%	20%	0.276	1	5450	16350	0.94	13.97
M2	HP70	3	C	19	16	304	6.91	30%	30%	20%	0.276	1	5450	16350	0.94	13.97
M3	HP70	3	C	19	16	304	6.91	30%	30%	20%	0.276	1	5450	16350	0.94	13.97
M4	HP70	5	C	19	16	304	6.91	30%	30%	20%	0.276	1	5450	27250	0.94	23.28
M5	HP70	5	C	19	16	304	6.91	30%	30%	20%	0.276	1	5450	27250	0.94	23.28

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1*	HP50	1	C	19	11.5	219	8.38	30%	30%	20%	0.227	1	3600	3600	0.94	3.52
*	F208	1	C	19	11.5	219	8.38	30%	30%	20%						
2	HP50	3	C	19	7	133	11.73	30%	30%	20%	0.178	1	3600	10800	0.94	13.60
3*	HP50	1	C	20	19	380	6.16	30%	30%	20%	0.306	1	3600	3600	0.94	2.73
*	F208	4	C	20	19	380	6.16	30%	30%	20%						
4	F208	9	B	39	24	936	1.68	30%	10%	20%	0.606	2	2650	47700	0.92	28.46
	HP50	4	C	39	24	936	4.04	30%	30%	20%	0.417	1	3600	14400	0.94	6.04
	F208	8	C	39	24	936	4.04	30%	30%	20%						
5	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP50	1	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	3600	0.94	2.43
	F208	3	C	24	19	456	5.66	30%	30%	20%						
6	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
	HP50	3	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	10800	0.94	7.29
	F208	5	C	24	19	456	5.66	30%	30%	20%						
7	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP50	2	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	7200	0.94	4.86
	F208	2	C	24	19	456	5.66	30%	30%	20%						
8	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP50	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	18000	0.94	12.15
9	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
10	HP50	4	C	18	15	270	7.33	30%	30%	20%	0.260	1	3600	14400	0.94	13.05
	F208	3	C	18	15	270	7.33	30%	30%	20%						
11	HP50	1	C	79	5	395	12.76	30%	30%	20%	0.178	1	3600	3600	0.94	1.53
12	HP50	3	C	9	6	54	16.67	30%	30%	20%	0.178	1	3600	10800	0.94	33.50
	F208	1	C	9	6	54	16.67	30%	30%	20%						
13	HP50	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	3600	3600	0.94	11.17
14	HP50	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	3600	3600	0.94	11.17
15	HP50	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	3600	3600	0.94	11.17
16	HP50	1	C	9	6	54	16.67	30%	30%	20%	0.178	1	3600	3600	0.94	11.17
17	HP50	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	3600	3600	0.94	12.18
18	HP50	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	3600	3600	0.94	12.18
19	HP50	1	C	9	5	45	18.67	30%	30%	20%	0.178	1	3600	3600	0.94	13.40
20	HP50	1	C	9	5	45	18.67	30%	30%	20%	0.178	1	3600	3600	0.94	13.40
21	HP50	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	3600	3600	0.94	12.18
22	HP50	1	C	9	5.5	50	17.58	30%	30%	20%	0.178	1	3600	3600	0.94	12.18

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	HP50	1	C	9	7	63	15.24	30%	30%	20%	0.178	1	3600	3600	0.94	9.57
24	F208	19	B	98	13	1274	2.18	30%	10%	20%	0.569	2	2650	100700	0.92	41.45
	F208	1	B	98	13	1274	2.18	30%	10%	20%	0.569	2	2650	5300	0.92	2.18
	HP50	10	C	98	13	1274	5.23	30%	30%	20%	0.347	1	3600	36000	0.94	9.23
25	HP50	5	C	33	17	561	5.35	30%	30%	20%	0.341	1	3600	18000	0.94	10.29
26	HP50	7	C	33	17	561	5.35	30%	30%	20%	0.341	1	3600	25200	0.94	14.41
27	F208	18	B	98	16	1568	1.82	30%	10%	20%	0.594	2	2650	95400	0.92	33.31
	F208	2	B	98	16	1568	1.82	30%	10%	20%	0.594	2	2650	10600	0.92	3.70
	HP50	3	C	98	16	1568	4.36	30%	30%	20%	0.397	1	3600	10800	0.94	2.57
	F208	2	C	98	16	1568	4.36	30%	30%	20%						
28	HP50	7	C	100	8	800	8.10	30%	30%	20%	0.234	1	3600	25200	0.94	6.94
29	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
30	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
31	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP50	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	18000	0.94	12.15
32	F208	3	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	15900	0.92	17.93
	F208	1	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	5300	0.92	5.98
	HP50	5	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	18000	0.94	12.15
33	F208	4	B	24	19	456	2.36	30%	10%	20%	0.558	2	2650	21200	0.92	23.91
	HP50	4	C	24	19	456	5.66	30%	30%	20%	0.327	1	3600	14400	0.94	9.72
34	F208	9	B	39	24	936	1.68	30%	10%	20%	0.606	2	2650	47700	0.92	28.46
	HP50	10	C	39	24	936	4.04	30%	30%	20%	0.417	1	3600	36000	0.94	15.09
35	HP50	9	C	28	25	700	4.54	30%	30%	20%	0.386	1	3600	32400	0.94	16.81
36	HP50	3	C	28	13	364	6.76	30%	30%	20%	0.282	1	3600	10800	0.94	7.87
R1	HP50	13	R	276	8	2208	3.22	30%	30%	20%	0.480	1	3600	46800	0.94	9.57
	HP50	14	L	276	8	2208	3.22	30%	30%	20%	0.480	1	3600	50400	0.94	10.31
R2	HP50	4	R	110	8	880	3.35	30%	30%	20%	0.470	1	3600	14400	0.94	7.24
	HP50	2	L	110	8	880	3.35	30%	30%	20%	0.470	1	3600	7200	0.94	3.62
	HP50	4	L	110	8	880	3.35	30%	30%	20%	0.470	1	3600	14400	0.94	7.24
R3	HP50	9	R	175	8	1400	3.27	30%	30%	20%	0.476	1	3600	32400	0.94	10.36
	HP50	4	L	175	8	1400	3.27	30%	30%	20%	0.476	1	3600	14400	0.94	4.61
R4	HP50	11	R	180	8	1440	3.26	30%	30%	20%	0.477	1	3600	39600	0.94	12.34
	HP50	1	L	180	8	1440	3.26	30%	30%	20%	0.477	1	3600	3600	0.94	1.12
R5	HP50	8	R	40	8	320	3.75	30%	30%	20%	0.439	1	3600	28800	0.94	37.17
R6	HP50	4	R	100	8	800	3.38	30%	30%	20%	0.467	1	3600	14400	0.94	7.91
	HP50	2	R	100	8	800	3.38	30%	30%	20%	0.467	1	3600	7200	0.94	3.95

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
R7	HP50	3	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	10800	0.94	11.38
M1	HP50	3	C	19	16	304	6.91	30%	30%	20%	0.276	1	3600	10800	0.94	9.23
M2	HP50	3	C	19	16	304	6.91	30%	30%	20%	0.276	1	3600	10800	0.94	9.23
M3	HP50	3	C	19	16	304	6.91	30%	30%	20%	0.276	1	3600	10800	0.94	9.23
M4	HP50	5	C	19	16	304	6.91	30%	30%	20%	0.276	1	3600	18000	0.94	15.38
M5	HP50	5	C	19	16	304	6.91	30%	30%	20%	0.276	1	3600	18000	0.94	15.38

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1*	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
*	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
2	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
3*	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
*	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44
4	I200	14	B	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101
5	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
6	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
7	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
8	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
9	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
10	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
11	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
12	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
13	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
14	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
15	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
16	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
17	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
18	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
19	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
20	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
21	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
22	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
Page Total		142						$3,987		$59		$780	$4,826

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
23	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
24	I200	23	B	2496	1	700	82.0	$818	0.0	$0	7.7	$121	$938
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	14	C	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
25	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
26	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
27	I200	14	B	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
28	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
29	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
30	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
31	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
32	I200	3	B	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
33	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
34	I200	14	B	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
	I200	14	C	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
35	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
36	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
R1	I200	13	R	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
	MV10	14	L	2496	1	16800	2.1	$58	0.3	$39	4.7	$122	$219
R2	I200	4	R	2496	1	700	14.3	$142	0.0	$0	1.3	$21	$163
	I200	2	L	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	MV10	4	L	2496	1	16800	0.6	$17	0.1	$11	1.3	$35	$62
R3	I200	9	R	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
	MV10	4	L	2496	1	16800	0.6	$17	0.1	$11	1.3	$35	$62
R4	I200	11	R	2496	1	700	39.2	$391	0.0	$0	3.7	$58	$449
	I200	1	L	2496	1	700	3.6	$36	0.0	$0	0.3	$5	$41
R5	I200	8	R	2496	1	700	28.5	$284	0.0	$0	2.7	$42	$326
R6	I200	4	R	2496	1	700	14.3	$142	0.0	$0	1.3	$21	$163
	MV10	2	R	2496	1	16800	0.3	$8	0.0	$6	0.7	$17	$31
Page Total		275						$8,743		$82		$1,534	$10,359

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
R7	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
M1	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
M2	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
M3	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
M4	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
M5	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
Page Total		32						$1,138		$0		$168	$1,305
Building Total		449						$13,868		$142		$2,481	$16,491

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1*	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
*	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
2	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
3*	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
*	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
4	F208	9	B	2496	2	14000	1.6	$23	0.2	$15	3.0	$57	$94	$477
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
5	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
6	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
7	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
8	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
9	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
10	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
11	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
12	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
13	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
14	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
15	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
16	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
17	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
18	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
19	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
20	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
21	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
22	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Page Total		98						$1,436		$243		$718	$2,397	$2,430

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
23	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
24	F208	19	B	2496	2	14000	3.4	$48	0.4	$31	6.3	$119	$198	$740
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
25	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
26	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
27	F208	18	B	2496	2	14000	3.2	$45	0.4	$29	6.0	$113	$188	$383
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
28	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
29	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
30	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
31	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
32	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$91
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
33	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
34	F208	9	B	2496	2	14000	1.6	$23	0.2	$15	3.0	$57	$94	$477
	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
35	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
36	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
R1	MH70	13	R	2496	1	5250	6.2	$401	0.3	$47	4.3	$113	$561	($31)
	MH70	14	L	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	($386)
R2	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
	MH70	2	L	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
	MH70	4	L	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($110)
R3	MH70	9	R	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	($21)
	MH70	4	L	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($110)
R4	MH70	11	R	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	($26)
	MH70	1	L	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
R5	MH70	8	R	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($19)
R6	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($55)
Page Total		224						$4,896		$667		$1,781	$7,343	$3,017

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
R7	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
M1	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
M2	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
M3	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
M4	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
M5	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
Page Total		22						$678		$79		$192	$949	$356
Building Total		344						$7,010		$988		$2,691	$10,689	$5,802

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1*	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
*	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
2	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
3*	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
*	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
4	F208	9	B	2496	2	14000	1.6	$23	0.2	$15	3.0	$57	$94	$477
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
5	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
6	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
7	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
8	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
9	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
10	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
11	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
12	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
13	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
14	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
15	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
16	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
17	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
18	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
19	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
20	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
21	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
22	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
Page Total		98						$388		$248		$718	$1,354	$3,473

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
23	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
24	F208	19	B	2496	2	14000	3.4	$48	0.4	$31	6.3	$119	$198	$740
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
25	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
26	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
27	F208	18	B	2496	2	14000	3.2	$45	0.4	$29	6.0	$113	$188	$383
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
28	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
29	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
30	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
31	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
32	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$91
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
33	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
34	F208	9	B	2496	2	14000	1.6	$23	0.2	$15	3.0	$57	$94	$477
	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
35	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
36	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
R1	HP50	13	R	2496	1	16800	1.9	$84	0.3	$47	4.3	$113	$244	$286
	HP70	14	L	2496	1	16800	2.1	$82	0.3	$52	4.7	$122	$257	($38)
R2	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
	HP70	2	L	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$45
	HP70	4	L	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	($11)
R3	HP50	9	R	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$198
	HP70	4	L	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	($11)
R4	HP50	11	R	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$242
	HP70	1	L	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$22
R5	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
R6	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	($6)
Page Total		224						$1,108		$679		$1,781	$3,567	$6,792

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
R7	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
M1	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
M2	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
M3	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
M4	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
M5	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
Page Total		22						$131		$81		$192	$404	$901
Building Total		344						$1,627		$1,008		$2,691	$5,325	$11,166

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1*	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
*	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
2	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
3*	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
*	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44	$0
4	F312	9	B	2496	3	14000	1.6	$41	0.2	$16	3.0	$57	$114	$457
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
5	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
6	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$0
7	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
8	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
9	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
10	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
11	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
12	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
13	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
14	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
15	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
16	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
17	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
18	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
19	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
20	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
21	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
22	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Page Total		98						$1,543		$250		$718	$2,511	$2,315

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
23	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
24	F312	19	B	2496	3	14000	3.4	$86	0.4	$34	6.3	$119	$240	$698
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
25	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
26	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
27	F312	18	B	2496	3	14000	3.2	$82	0.4	$32	6.0	$113	$227	$344
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
28	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
29	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
30	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
31	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
32	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$85
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
33	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
34	F312	9	B	2496	3	14000	1.6	$41	0.2	$16	3.0	$57	$114	$457
	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
35	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
36	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
R1	MH70	13	R	2496	1	5250	6.2	$401	0.3	$47	4.3	$113	$561	($31)
	MH70	14	L	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	($386)
R2	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
	MH70	2	L	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
	MH70	4	L	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($110)
R3	MH70	9	R	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	($21)
	MH70	4	L	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($110)
R4	MH70	11	R	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	($26)
	MH70	1	L	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
R5	MH70	8	R	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($19)
R6	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($55)
Page Total		224						$5,039		$679		$1,781	$7,498	$2,861

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
R7	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
M1	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
M2	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
M3	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
M4	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
M5	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
Page Total		22						$678		$79		$192	$949	$356
Building Total		344						$7,260		$1,008		$2,691	$10,959	$5,532

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1*	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
*	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
2	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
3*	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
*	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44	$0
4	F312	9	B	2496	3	14000	1.6	$41	0.2	$16	3.0	$57	$114	$457
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	8	C	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$0
5	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
6	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$0
7	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
8	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
9	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
10	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
11	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
12	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
13	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
14	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
15	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
16	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
17	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
18	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
19	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
20	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
21	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
22	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
Page Total		98						$495		$255		$718	$1,468	$3,358

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
23	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
24	F312	19	B	2496	3	14000	3.4	$86	0.4	$34	6.3	$119	$240	$698
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
25	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
26	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
27	F312	18	B	2496	3	14000	3.2	$82	0.4	$32	6.0	$113	$227	$344
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
28	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
29	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
30	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
31	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
32	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$85
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
33	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
34	F312	9	B	2496	3	14000	1.6	$41	0.2	$16	3.0	$57	$114	$457
	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
35	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
36	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
R1	HP50	13	R	2496	1	16800	1.9	$84	0.3	$47	4.3	$113	$244	$286
	HP70	14	L	2496	1	16800	2.1	$82	0.3	$52	4.7	$122	$257	($38)
R2	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
	HP70	2	L	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$45
	HP70	4	L	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	($11)
R3	HP50	9	R	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$198
	HP70	4	L	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	($11)
R4	HP50	11	R	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$242
	HP70	1	L	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$22
R5	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
R6	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	($6)
Page Total		224						$1,251		$691		$1,781	$3,723	$6,637

11/9/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
R7	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
M1	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
M2	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
M3	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
M4	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
M5	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
Page Total		22						$131		$81		$192	$404	$901
Building Total		344						$1,877		$1,028		$2,691	$5,595	$10,896

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1*	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
*	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
2	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
3*	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
*	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
4	F208	9	B	2496	2	14000	1.6	$23	0.2	$15	3.0	$57	$94	$477
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	8	C	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$18
5	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
6	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
7	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
8	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
9	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
10	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
11	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
12	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
13	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
14	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
15	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
16	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
17	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
18	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
19	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
20	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
21	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
22	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
Page Total		98						$412		$243		$718	$1,373	$3,454

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
23	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
24	F208	19	B	2496	2	14000	3.4	$48	0.4	$31	6.3	$119	$198	$740
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	HP50	10	C	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$383
25	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
26	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
27	F208	18	B	2496	2	14000	3.2	$45	0.4	$29	6.0	$113	$188	$383
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
28	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
29	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
30	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
31	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
32	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$91
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
33	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
34	F208	9	B	2496	2	14000	1.6	$23	0.2	$15	3.0	$57	$94	$477
	HP50	10	C	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$383
35	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
36	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
R1	HP50	13	R	2496	1	16800	1.9	$84	0.3	$47	4.3	$113	$244	$286
	HP50	14	L	2496	1	16800	2.1	$90	0.3	$50	4.7	$122	$263	($44)
R2	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
	HP50	2	L	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
	HP50	4	L	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	($13)
R3	HP50	9	R	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$198
	HP50	4	L	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	($13)
R4	HP50	11	R	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$242
	HP50	1	L	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
R5	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
R6	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	($6)
Page Total		224						$1,166		$667		$1,781	$3,613	$6,746

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line B
Building B-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
R7	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
M1	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
M2	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
M3	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
M4	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
M5	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
Page Total		22						$142		$79		$192	$413	$892
Building Total		344						$1,720		$988		$2,691	$5,399	$11,092

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
2	I200	2	9-0	C	36	110	10	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
3	I200	3	6-6	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	7	10-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
4	I200	6	7-0	B	36	330	31	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
	I200	7	10-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
5	I200	3	7-0	B	36	135	13	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	3	7-0	B				132	0.40	$133	$14	$42	F312	2	132	0.26	$1,393	F312	5	48	52	988	659	1,647	$1,581
	I200	7	10-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
6	I200	8	7-0	B	36	345	32	200	1.60	$206	$0	$113	I200	4	200	0.80	$2,835	I200	12	48	52	3,994	1,997	5,990	$3,154
	F212	1	7-0	B				82	0.08	$37	$4	$15	F212	1	82	0.08	$738	F212	2	48	52	205	205	409	$794
	I200	8	10-0	C				200	1.60	$206	$0	$113	I200	4	200	0.80	$2,835	I200	12	48	52	3,994	1,997	5,990	$3,154
7	F312	8	7-0	B	36	620	58	132	1.06	$354	$36	$111	F312	4	132	0.53	$2,785	F312	12	48	52	2,636	1,318	3,954	$3,287
	I200	5	9-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
8	I200	7	7-0	B	36	470	44	200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
	F312	1	7-0	B				132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
	I200	9	10-0	C	36	170	16	200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
9	I200	6	7-0	B	36	480	45	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
	F212	2	7-0	B				82	0.16	$75	$7	$30	F212	1	82	0.08	$738	F212	3	48	52	409	205	614	$849
	I200	4	10-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
10	F312	3	7-0	B	36	420	39	132	0.40	$133	$14	$42	F312	2	132	0.26	$1,393	F312	5	48	52	988	659	1,647	$1,581
	I200	3	10-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
11	F312	3	7-0	B	36	280	26	132	0.40	$133	$14	$42	F312	2	132	0.26	$1,393	F312	5	48	52	988	659	1,647	$1,581
	I200	3	10-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
12	F212	4	7-0	B	36	370	34	82	0.33	$149	$14	$59	F212	2	82	0.16	$1,476	F212	6	48	52	819	409	1,228	$1,699
	F312	2	7-0	B	36	340	32	132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
	I200	8	10-0	C				200	1.60	$206	$0	$113	I200	4	200	0.80	$2,835	I200	12	48	52	3,994	1,997	5,990	$3,154
13	I200	4	8-0	B				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	5	8-0	B	36	730	68	132	0.66	$221	$23	$70	F312	2	132	0.26	$1,393	F312	7	48	52	1,647	659	2,306	$1,706
	I200	11	10-0	C	36	250	23	200	2.20	$283	$0	$156	I200	5	200	1.00	$3,544	I200	16	48	52	5,491	2,496	7,987	$3,982
New Panel																	$1,500								$1,500
Page Total		145							26.47	$4,272	$138	$2,053		73		13.18	$53,180		218			66,079	32,887	98,966	$59,642

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
14	I200	1	7-0	B				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F312	7	7-0	B	36	315	29	132	0.92	$310	$32	$97	F312	3	132	0.40	$2,089	F312	10	48	52	2,306	988	3,295	$2,528
	I200	11	9-0	C				200	2.20	$283	$0	$156	I200	5	200	1.00	$3,544	I200	16	48	52	5,491	2,496	7,987	$3,982
	F312	1	10-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
15	I200	1	7-0	B				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F312	5	7-0	B	36	250	23	132	0.66	$221	$23	$70	F312	2	132	0.26	$1,393	F312	7	48	52	1,647	659	2,306	$1,706
	I200	11	10-0	C				200	2.20	$283	$0	$156	I200	5	200	1.00	$3,544	I200	16	48	52	5,491	2,496	7,987	$3,982
	F312	1	10-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
16	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
17	I200	8	7-0	B	36	285	26	200	1.60	$206	$0	$113	I200	4	200	0.80	$2,835	I200	12	48	52	3,994	1,997	5,990	$3,154
	I200	9	10-0	C				200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
18	I200	3	7-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F212	2	7-0	B	36	270	25	82	0.16	$75	$7	$30	F212	1	82	0.08	$738	F212	3	48	52	409	205	614	$849
	I200	11	10-0	C				200	2.20	$283	$0	$156	I200	5	200	1.00	$3,544	I200	16	48	52	5,491	2,496	7,987	$3,982
19	I200	2	9-8	C	36	30	3	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
20	I200	2	9-2	C	36	50	5	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
21	I200	2	8-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	1	8-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
R1	I200	2	7-6	R				200	0.40	$51	$0	$28	I200	0	200	0.00	$0	I200	2	48	52	998	0	998	$80
R2	I200	27	8-0	R				200	5.40	$694	$0	$383	I200	0	200	0.00	$0	I200	27	48	52	13,478	0	13,478	$1,076
R3	I200	3	9-0	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
R4	I200	11	8-0	R				200	2.20	$283	$0	$156	I200	0	200	0.00	$0	I200	11	48	52	5,491	0	5,491	$439
Page Total		122							23.14	$3,436	$75	$1,727		37		6.94	$26,190		159			57,767	17,327	75,095	$31,427
Building Tot		267							49.62	$7,708	$212	$3,780		110		20.12	$79,369		377			123,847	50,215	174,061	$91,070

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
2	I200	3	C	110	10	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	5	B			200	1.00	$1,537	F208	5		62	0.31	$3,482	48	52	2,496	774	1,722	($1,945)
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
4	I200	9	B	330	31	200	1.80	$2,365	F208	7		62	0.43	$4,874	48	52	4,493	1,083	3,410	($2,509)
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
5	I200	5	B	135	13	200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
	F312	5	B			132	0.66	$1,581	F208	3		62	0.19	$2,089	48	52	1,647	464	1,183	($508)
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
6	I200	12	B	345	32	200	2.40	$3,154	F208	7		62	0.43	$4,874	48	52	5,990	1,083	4,907	($1,721)
	F212	2	B			82	0.16	$794	F208	1		62	0.06	$696	48	52	409	155	255	$97
	I200	12	C			200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
7	F312	12	B	620	58	132	1.58	$3,287	F208	8		62	0.50	$5,571	48	52	3,954	1,238	2,716	($2,284)
	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
8	I200	10	B	470	44	200	2.00	$2,405	F208	7		62	0.43	$4,874	48	52	4,992	1,083	3,909	($2,469)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	13	C	170	16	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
9	I200	9	B	480	45	200	1.80	$2,365	F208	6		62	0.37	$4,178	48	52	4,493	929	3,564	($1,813)
	F212	3	B			82	0.25	$849	F208	2		62	0.12	$1,393	48	52	614	310	305	($543)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
10	F312	5	B	420	39	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
11	F312	5	B	280	26	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
12	F212	6	B	370	34	82	0.49	$1,699	F208	6		62	0.37	$4,178	48	52	1,228	929	300	($2,479)
	F312	3	B	340	32	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	I200	12	C			200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
13	I200	6	B			200	1.20	$1,577	F208	3		62	0.19	$2,089	48	52	2,995	464	2,531	($512)
	F312	7	B	730	68	132	0.92	$1,706	F208	5		62	0.31	$3,482	48	52	2,306	774	1,533	($1,775)
	I200	16	C	250	23	200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
New Panel								$1,500												$1,500
Page Total		218					39.65	$59,642		151			11.41	$94,084			98,966	28,489	70,477	($34,442)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
14	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
	F312	10	B	315	29	132	1.32	$2,528	F208	7		62	0.43	$4,874	48	52	3,295	1,083	2,211	($2,346)
	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
15	I200	2	B			200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	F312	7	B	250	23	132	0.92	$1,706	F208	5		62	0.31	$3,482	48	52	2,306	774	1,533	($1,775)
	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
16	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
17	I200	12	B	285	26	200	2.40	$3,154	F208	8		62	0.50	$5,571	48	52	5,990	1,238	4,752	($2,417)
	I200	13	C			200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
18	I200	5	B			200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
	F212	3	B	270	25	82	0.25	$849	F208	2		62	0.12	$1,393	48	52	614	310	305	($543)
	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,292	48	52	7,987	2,444	5,544	($2,310)
19	I200	3	C	30	3	200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
20	I200	3	C	50	5	200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
21	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
R1	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,144	48	52	998	444	554	($1,064)
R2	I200	27	R			200	5.40	$1,076	MH70	27		89	2.40	$15,445	48	52	13,478	5,998	7,481	($14,368)
R3	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,716	48	52	1,498	666	831	($1,596)
R4	I200	11	R			200	2.20	$439	MH70	11		89	0.98	$6,292	48	52	5,491	2,444	3,048	($5,854)
Page Total		159					30.09	$31,427		124			10.17	$74,229			75,095	25,389	49,705	($42,801)
Building Tot		377					69.74	$91,070		275			21.59	$168,313			174,061	53,879	120,182	($77,243)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
2	I200	3	C	110	10	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	5	B			200	1.00	$1,537	F208	5		62	0.31	$3,482	48	52	2,496	774	1,722	($1,945)
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
4	I200	9	B	330	31	200	1.80	$2,365	F208	7		62	0.43	$4,874	48	52	4,493	1,083	3,410	($2,509)
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
5	I200	5	B	135	13	200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
	F312	5	B			132	0.66	$1,581	F208	3		62	0.19	$2,089	48	52	1,647	464	1,183	($508)
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
6	I200	12	B	345	32	200	2.40	$3,154	F208	7		62	0.43	$4,874	48	52	5,990	1,083	4,907	($1,721)
	F212	2	B			82	0.16	$794	F208	1		62	0.06	$696	48	52	409	155	255	$97
	I200	12	C			200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
7	F312	12	B	620	58	132	1.58	$3,287	F208	8		62	0.50	$5,571	48	52	3,954	1,238	2,716	($2,284)
	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
8	I200	10	B	470	44	200	2.00	$2,405	F208	7		62	0.43	$4,874	48	52	4,992	1,083	3,909	($2,469)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	13	C	170	16	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
9	I200	9	B	480	45	200	1.80	$2,365	F208	6		62	0.37	$4,178	48	52	4,493	929	3,564	($1,813)
	F212	3	B			82	0.25	$849	F208	2		62	0.12	$1,393	48	52	614	310	305	($543)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
10	F312	5	B	420	39	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
11	F312	5	B	280	26	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
12	F212	6	B	370	34	82	0.49	$1,699	F208	6		62	0.37	$4,178	48	52	1,228	929	300	($2,479)
	F312	3	B	340	32	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	I200	12	C			200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
13	I200	6	B			200	1.20	$1,577	F208	3		62	0.19	$2,089	48	52	2,995	464	2,531	($512)
	F312	7	B	730	68	132	0.92	$1,706	F208	5		62	0.31	$3,482	48	52	2,306	774	1,533	($1,775)
	I200	16	C	250	23	200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
New Panel								$1,500												$1,500
Page Total		218					39.65	$59,642		151			12.17	$99,113			98,966	30,386	68,580	($39,471)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
14	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
	F312	10	B	315	29	132	1.32	$2,528	F208	7		62	0.43	$4,874	48	52	3,295	1,083	2,211	($2,346)
	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
15	I200	2	B			200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	F312	7	B	250	23	132	0.92	$1,706	F208	5		62	0.31	$3,482	48	52	2,306	774	1,533	($1,775)
	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
16	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
17	I200	12	B	285	26	200	2.40	$3,154	F208	8		62	0.50	$5,571	48	52	5,990	1,238	4,752	($2,417)
	I200	13	C			200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
18	I200	5	B			200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
	F212	3	B	270	25	82	0.25	$849	F208	2		62	0.12	$1,393	48	52	614	310	305	($543)
	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
19	I200	3	C	30	3	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
20	I200	3	C	50	5	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
21	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
R1	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
R2	I200	27	R			200	5.40	$1,076	HP50	27		58	1.57	$16,289	48	52	13,478	3,909	9,570	($15,213)
R3	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
R4	I200	11	R			200	2.20	$439	HP50	11		58	0.64	$6,636	48	52	5,491	1,592	3,899	($6,198)
Page Total		159					30.09	$31,427		124			9.33	$78,455			75,095	23,285	51,809	($47,028)
Building Tot		377					69.74	$91,070		275			21.50	$177,568			174,061	53,671	120,390	($86,498)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
2	I200	3	C	110	10	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	5	B			200	1.00	$1,537	F312	5		132	0.66	$3,482	48	52	2,496	1,647	849	($1,945)
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
4	I200	9	B	330	31	200	1.80	$2,365	F312	7		132	0.92	$4,874	48	52	4,493	2,306	2,186	($2,509)
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
5	I200	5	B	135	13	200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
	F312	5	B			132	0.66	$1,581	F312	3		132	0.40	$2,089	48	52	1,647	988	659	($508)
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
6	I200	12	B	345	32	200	2.40	$3,154	F312	7		132	0.92	$4,874	48	52	5,990	2,306	3,684	($1,721)
	F212	2	B			82	0.16	$794	F312	1		132	0.13	$696	48	52	409	329	80	$97
	I200	12	C			200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
7	F312	12	B	620	58	132	1.58	$3,287	F312	8		132	1.06	$5,571	48	52	3,954	2,636	1,318	($2,284)
	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
8	I200	10	B	470	44	200	2.00	$2,405	F312	7		132	0.92	$4,874	48	52	4,992	2,306	2,686	($2,469)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	I200	13	C	170	16	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
9	I200	9	B	480	45	200	1.80	$2,365	F312	6		132	0.79	$4,178	48	52	4,493	1,977	2,516	($1,813)
	F212	3	B			82	0.25	$849	F312	2		132	0.26	$1,393	48	52	614	659	(45)	($543)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
10	F312	5	B	420	39	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
11	F312	5	B	280	26	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
12	F212	6	B	370	34	82	0.49	$1,699	F312	6		132	0.79	$4,178	48	52	1,228	1,977	(749)	($2,479)
	F312	3	B	340	32	132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
	I200	12	C			200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
13	I200	6	B			200	1.20	$1,577	F312	3		132	0.40	$2,089	48	52	2,995	988	2,007	($512)
	F312	7	B	730	68	132	0.92	$1,706	F312	5		132	0.66	$3,482	48	52	2,306	1,647	659	($1,775)
	I200	16	C	250	23	200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
New Panel								$1,500												$1,500
Page Total		218					39.65	$59,642		151			16.66	$94,084			98,966	41,593	57,373	($34,442)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
14	I200	2	B			200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
	F312	10	B	315	29	132	1.32	$2,528	F312	7		132	0.92	$4,874	48	52	3,295	2,306	988	($2,346)
	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
15	I200	2	B			200	0.40	$749	F312	2		132	0.26	$1,393	48	52	998	659	339	($644)
	F312	7	B	250	23	132	0.92	$1,706	F312	5		132	0.66	$3,482	48	52	2,306	1,647	659	($1,775)
	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
16	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
17	I200	12	B	285	26	200	2.40	$3,154	F312	8		132	1.06	$5,571	48	52	5,990	2,636	3,355	($2,417)
	I200	13	C			200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
18	I200	5	B			200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
	F212	3	B	270	25	82	0.25	$849	F312	2		132	0.26	$1,393	48	52	614	659	(45)	($543)
	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
19	I200	3	C	30	3	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
20	I200	3	C	50	5	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
21	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
R1	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
R2	I200	27	R			200	5.40	$1,076	MH70	27		89	2.40	$14,871	48	52	13,478	5,998	7,481	($13,794)
R3	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
R4	I200	11	R			200	2.20	$439	MH70	11		89	0.98	$6,058	48	52	5,491	2,444	3,048	($5,620)
Page Total		159					30.09	$31,427		121			12.41	$71,052			75,095	30,980	44,114	($39,625)
Building Tot		377					69.74	$91,070		272			29.08	$165,136			174,061	72,574	101,487	($74,067)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
2	I200	3	C	110	10	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	5	B			200	1.00	$1,537	F312	5		132	0.66	$3,482	48	52	2,496	1,647	849	($1,945)
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
4	I200	9	B	330	31	200	1.80	$2,365	F312	7		132	0.92	$4,874	48	52	4,493	2,306	2,186	($2,509)
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
5	I200	5	B	135	13	200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
	F312	5	B			132	0.66	$1,581	F312	3		132	0.40	$2,089	48	52	1,647	988	659	($508)
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
6	I200	12	B	345	32	200	2.40	$3,154	F312	7		132	0.92	$4,874	48	52	5,990	2,306	3,684	($1,721)
	F212	2	B			82	0.16	$794	F312	1		132	0.13	$696	48	52	409	329	80	$97
	I200	12	C			200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
7	F312	12	B	620	58	132	1.58	$3,287	F312	8		132	1.06	$5,571	48	52	3,954	2,636	1,318	($2,284)
	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
8	I200	10	B	470	44	200	2.00	$2,405	F312	7		132	0.92	$4,874	48	52	4,992	2,306	2,686	($2,469)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	I200	13	C	170	16	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
9	I200	9	B	480	45	200	1.80	$2,365	F312	6		132	0.79	$4,178	48	52	4,493	1,977	2,516	($1,813)
	F212	3	B			82	0.25	$849	F312	2		132	0.26	$1,393	48	52	614	659	(45)	($543)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
10	F312	5	B	420	39	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
11	F312	5	B	280	26	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
12	F212	6	B	370	34	82	0.49	$1,699	F312	6		132	0.79	$4,178	48	52	1,228	1,977	(749)	($2,479)
	F312	3	B	340	32	132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
	I200	12	C			200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
13	I200	6	B			200	1.20	$1,577	F312	3		132	0.40	$2,089	48	52	2,995	988	2,007	($512)
	F312	7	B	730	68	132	0.92	$1,706	F312	5		132	0.66	$3,482	48	52	2,306	1,647	659	($1,775)
	I200	16	C	250	23	200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
New Panel								$1,500												$1,500
Page Total		218					39.65	$59,642		151			17.42	$99,113			98,966	43,490	55,476	($39,471)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
14	I200	2	B			200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
	F312	10	B	315	29	132	1.32	$2,528	F312	7		132	0.92	$4,874	48	52	3,295	2,306	988	($2,346)
	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
15	I200	2	B			200	0.40	$749	F312	2		132	0.26	$1,393	48	52	998	659	339	($644)
	F312	7	B	250	23	132	0.92	$1,706	F312	5		132	0.66	$3,482	48	52	2,306	1,647	659	($1,775)
	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
16	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
17	I200	12	B	285	26	200	2.40	$3,154	F312	8		132	1.06	$5,571	48	52	5,990	2,636	3,355	($2,417)
	I200	13	C			200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
18	I200	5	B			200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
	F212	3	B	270	25	82	0.25	$849	F312	2		132	0.26	$1,393	48	52	614	659	(45)	($543)
	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
19	I200	3	C	30	3	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
20	I200	3	C	50	5	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
21	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
R1	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
R2	I200	27	R			200	5.40	$1,076	HP50	27		58	1.57	$16,289	48	52	13,478	3,909	9,570	($15,213)
R3	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
R4	I200	11	R			200	2.20	$439	HP50	11		58	0.64	$6,636	48	52	5,491	1,592	3,899	($6,198)
Page Total		159					30.09	$31,427		121			11.57	$76,554			75,095	28,876	46,218	($45,127)
Building Tot		377					69.74	$91,070		272			28.99	$175,667			174,061	72,367	101,695	($84,597)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
2	I200	3	C	110	10	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
3	I200	5	B			200	1.00	$1,537	F208	5		62	0.31	$3,482	48	52	2,496	774	1,722	($1,945)
	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
4	I200	9	B	330	31	200	1.80	$2,365	F208	7		62	0.43	$4,874	48	52	4,493	1,083	3,410	($2,509)
	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
5	I200	5	B	135	13	200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
	F312	5	B			132	0.66	$1,581	F208	3		62	0.19	$2,089	48	52	1,647	464	1,183	($508)
	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
6	I200	12	B	345	32	200	2.40	$3,154	F208	7		62	0.43	$4,874	48	52	5,990	1,083	4,907	($1,721)
	F212	2	B			82	0.16	$794	F208	1		62	0.06	$696	48	52	409	155	255	$97
	I200	12	C			200	2.40	$3,154	HP50	8		58	0.46	$4,826	48	52	5,990	1,158	4,832	($1,673)
7	F312	12	B	620	58	132	1.58	$3,287	F208	8		62	0.50	$5,571	48	52	3,954	1,238	2,716	($2,284)
	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
8	I200	10	B	470	44	200	2.00	$2,405	F208	7		62	0.43	$4,874	48	52	4,992	1,083	3,909	($2,469)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	13	C	170	16	200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
9	I200	9	B	480	45	200	1.80	$2,365	F208	6		62	0.37	$4,178	48	52	4,493	929	3,564	($1,813)
	F212	3	B			82	0.25	$849	F208	2		62	0.12	$1,393	48	52	614	310	305	($543)
	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
10	F312	5	B	420	39	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
11	F312	5	B	280	26	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
12	F212	6	B	370	34	82	0.49	$1,699	F208	6		62	0.37	$4,178	48	52	1,228	929	300	($2,479)
	F312	3	B	340	32	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	I200	12	C			200	2.40	$3,154	HP50	8		58	0.46	$4,826	48	52	5,990	1,158	4,832	($1,673)
13	I200	6	B			200	1.20	$1,577	F208	3		62	0.19	$2,089	48	52	2,995	464	2,531	($512)
	F312	7	B	730	68	132	0.92	$1,706	F208	5		62	0.31	$3,482	48	52	2,306	774	1,533	($1,775)
	I200	16	C	250	23	200	3.20	$3,982	HP50	11		58	0.64	$6,636	48	52	7,987	1,592	6,395	($2,654)
New Panel								$1,500												$1,500
Page Total		218					39.65	$59,642		151			9.06	$98,078			98,966	22,609	76,358	($38,436)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
14	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
	F312	10	B	315	29	132	1.32	$2,528	F208	7		62	0.43	$4,874	48	52	3,295	1,083	2,211	($2,346)
	I200	16	C			200	3.20	$3,982	HP50	11		58	0.64	$6,636	48	52	7,987	1,592	6,395	($2,654)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
15	I200	2	B			200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	F312	7	B	250	23	132	0.92	$1,706	F208	5		62	0.31	$3,482	48	52	2,306	774	1,533	($1,775)
	I200	16	C			200	3.20	$3,982	HP50	11		58	0.64	$6,636	48	52	7,987	1,592	6,395	($2,654)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
16	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
17	I200	12	B	285	26	200	2.40	$3,154	F208	8		62	0.50	$5,571	48	52	5,990	1,238	4,752	($2,417)
	I200	13	C			200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
18	I200	5	B			200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
	F212	3	B	270	25	82	0.25	$849	F208	2		62	0.12	$1,393	48	52	614	310	305	($543)
	I200	16	C			200	3.20	$3,982	HP50	11		58	0.64	$6,636	48	52	7,987	1,592	6,395	($2,654)
19	I200	3	C	30	3	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
20	I200	3	C	50	5	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
21	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
R1	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
R2	I200	27	R			200	5.40	$1,076	HP50	27		58	1.57	$16,289	48	52	13,478	3,909	9,570	($15,213)
R3	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
R4	I200	11	R			200	2.20	$439	HP50	11		58	0.64	$6,636	48	52	5,491	1,592	3,899	($6,198)
Page Total		159					30.09	$31,427		124			7.32	$77,788			75,095	18,271	56,824	($46,360)
Building Tot		377					69.74	$91,070		275			16.38	$175,866			174,061	40,879	133,182	($84,796)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	3	C	19	13	247	7.77	30%	30%	20%	0.189	1	3400	10200	0.86	6.75
2	I200	3	C	19	9	171	9.82	30%	30%	20%	0.144	1	3400	10200	0.86	7.43
3	I200	5	B	37	21	777	1.87	30%	10%	20%	0.405	1	3400	17000	0.86	7.66
	I200	10	C	37	21	777	4.48	30%	30%	20%	0.288	1	3400	34000	0.86	10.89
4	I200	9	B	35	21	735	1.90	30%	10%	20%	0.402	1	3400	30600	0.86	14.47
	I200	10	C	35	21	735	4.57	30%	30%	20%	0.284	1	3400	34000	0.86	11.36
5	I200	5	B	35	21	735	1.90	30%	10%	20%	0.402	1	3400	17000	0.86	8.04
	F312	5	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	38550	0.92	25.09
	I200	10	C	35	21	735	4.57	30%	30%	20%	0.284	1	3400	34000	0.86	11.36
6	I200	12	B	35	21	735	1.90	30%	10%	20%	0.402	1	3400	40800	0.86	19.29
	F212	2	B	35	21	735	1.90	30%	10%	20%	0.546	2	2570	10280	0.92	7.04
	I200	12	C	35	21	735	4.57	30%	30%	20%	0.284	1	3400	40800	0.86	13.63
7	F312	12	B	21	19	399	2.51	30%	10%	20%	0.478	3	2570	92520	0.92	102.15
	I200	7	C	21	19	399	6.02	30%	30%	20%	0.235	1	3400	23800	0.86	12.12
8	I200	10	B	35	21	735	1.90	30%	10%	20%	0.402	1	3400	34000	0.86	16.08
	F312	2	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	15420	0.92	10.03
	I200	13	C	35	21	735	4.57	30%	30%	20%	0.284	1	3400	44200	0.86	14.76
9	I200	9	B	37	21	777	1.87	30%	10%	20%	0.405	1	3400	30600	0.86	13.79
	F212	3	B	37	21	777	1.87	30%	10%	20%	0.549	2	2570	15420	0.92	10.04
	I200	6	C	37	21	777	4.48	30%	30%	20%	0.288	1	3400	20400	0.86	6.54
10	F312	5	B	30	19	570	2.15	30%	10%	20%	0.501	3	2570	38550	0.92	31.23
	I200	5	C	30	19	570	5.16	30%	30%	20%	0.261	1	3400	17000	0.86	6.73
11	F312	5	B	30	18	540	2.22	30%	10%	20%	0.497	3	2570	38550	0.92	32.70
	I200	5	C	30	18	540	5.33	30%	30%	20%	0.256	1	3400	17000	0.86	6.97
12	F212	6	B	35	30	1050	1.55	30%	10%	20%	0.575	2	2570	30840	0.92	15.56
	F312	3	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	23130	0.92	11.06
	I200	12	C	35	30	1050	3.71	30%	30%	20%	0.323	1	3400	40800	0.86	10.85
13	I200	6	B	30	18	540	2.22	30%	10%	20%	0.377	1	3400	20400	0.86	12.31
	F312	7	B	30	18	540	2.22	30%	10%	20%	0.497	3	2570	53970	0.92	45.78
	I200	16	C	30	18	540	5.33	30%	30%	20%	0.256	1	3400	54400	0.86	22.30

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
14	I200	2	B	36	30	1080	1.53	30%	10%	20%	0.440	1	3400	6800	0.86	2.39
	F312	10	B	36	30	1080	1.53	30%	10%	20%	0.547	3	2570	77100	0.92	35.99
	I200	16	C	36	30	1080	3.67	30%	30%	20%	0.325	1	3400	54400	0.86	14.15
	F312	1	C	36	30	1080	3.67	30%	30%	20%						
15	I200	2	B	35	30	1050	1.55	30%	10%	20%	0.438	1	3400	6800	0.86	2.45
	F312	7	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	53970	0.92	25.82
	I200	16	C	35	30	1050	3.71	30%	30%	20%	0.323	1	3400	54400	0.86	14.47
	F312	1	C	35	30	1050	3.71	30%	30%	20%						
16	I200	2	C	28	7	196	10.71	30%	30%	20%	0.140	1	3400	6800	0.86	4.20
17	I200	12	B	35	30	1050	1.55	30%	10%	20%	0.438	1	3400	40800	0.86	14.71
	I200	13	C	35	30	1050	3.71	30%	30%	20%	0.323	1	3400	44200	0.86	11.75
18	I200	5	B	35	30	1050	1.55	30%	10%	20%	0.438	1	3400	17000	0.86	6.13
	F212	3	B	35	30	1050	1.55	30%	10%	20%	0.575	2	2570	15420	0.92	7.78
	I200	16	C	35	30	1050	3.71	30%	30%	20%	0.323	1	3400	54400	0.86	14.47
19	I200	3	C	25	8	200	9.90	30%	30%	20%	0.142	1	3400	10200	0.86	6.26
20	I200	3	C	25	9	225	9.07	30%	30%	20%	0.162	1	3400	10200	0.86	6.35
21	I200	3	C	30	15	450	6.00	30%	30%	20%	0.236	1	3400	10200	0.86	4.62
	F312	1	C	30	15	450	6.00	30%	30%	20%						
R1	I200	2	R	50	8	400	3.63	30%	30%	20%	0.328	1	3400	6800	0.86	4.82
R2	I200	27	R	111	8	888	3.35	30%	30%	20%	0.342	1	3400	91800	0.86	30.56
R3	I200	3	R	57	8	456	3.56	30%	30%	20%	0.331	1	3400	10200	0.86	6.40
R4	I200	11	R	130	8	1040	3.32	30%	30%	20%	0.344	1	3400	37400	0.86	10.69

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	2	C	19	13	247	7.77	30%	30%	20%	0.157	1	4000	8000	0.90	4.59
2	MH70	2	C	19	9	171	9.82	30%	30%	20%	0.119	1	4000	8000	0.90	5.02
3	F208	5	B	37	21	777	1.87	30%	10%	20%	0.590	2	2650	26500	0.92	18.54
	MH70	7	C	37	21	777	4.48	30%	30%	20%	0.247	1	4000	28000	0.90	8.03
4	F208	7	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	27.35
	MH70	7	C	35	21	735	4.57	30%	30%	20%	2.440	1	4000	28000	0.90	83.85
5	F208	4	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	21200	0.92	15.63
	F208	3	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	15900	0.92	11.72
	MH70	7	C	35	21	735	4.57	30%	30%	20%	2.440	1	4000	28000	0.90	83.85
6	F208	7	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	27.35
	F208	1	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	5300	0.92	3.91
	MH70	8	C	35	21	735	4.57	30%	30%	20%	2.440	1	4000	32000	0.90	95.83
7	F208	8	B	21	19	399	2.51	30%	10%	20%	0.549	2	2650	42400	0.92	53.77
	MH70	5	C	21	19	399	6.02	30%	30%	20%	0.199	1	4000	20000	0.90	9.00
8	F208	7	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	27.35
	F208	1	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	5300	0.92	3.91
	MH70	9	C	35	21	735	4.57	30%	30%	20%	2.440	1	4000	36000	0.90	107.81
9	F208	6	B	37	21	777	1.87	30%	10%	20%	0.590	2	2650	31800	0.92	22.25
	F208	2	B	37	21	777	1.87	30%	10%	20%	0.590	2	2650	10600	0.92	7.42
	MH70	4	C	37	21	777	4.48	30%	30%	20%	0.247	1	4000	16000	0.90	4.59
10	F208	4	B	30	19	570	2.15	30%	10%	20%	0.571	2	2650	21200	0.92	19.57
	MH70	3	C	30	19	570	5.16	30%	30%	20%	0.223	1	4000	12000	0.90	4.24
11	F208	4	B	30	18	540	2.22	30%	10%	20%	0.567	2	2650	21200	0.92	20.51
	MH70	3	C	30	18	540	5.33	30%	30%	20%	0.218	1	4000	12000	0.90	4.37
12	F208	6	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	31800	0.92	17.19
	F208	2	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	10600	0.92	5.73
	MH70	8	C	35	30	1050	3.71	30%	30%	20%	0.281	1	4000	32000	0.90	7.73
13	F208	3	B	30	18	540	2.22	30%	10%	20%	0.567	2	2650	15900	0.92	15.39
	F208	5	B	30	18	540	2.22	30%	10%	20%	0.567	2	2650	26500	0.92	25.64
	MH70	11	C	30	18	540	5.33	30%	30%	20%	0.218	1	4000	44000	0.90	16.02

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
14	F208	1	B	36	30	1080	1.53	30%	10%	20%	0.618	2	2650	5300	0.92	2.80
	F208	7	B	36	30	1080	1.53	30%	10%	20%	0.618	2	2650	37100	0.92	19.57
	MH70	11	C	36	30	1080	3.67	30%	30%	20%	0.283	1	4000	44000	0.90	10.40
	F208	1	C	36	30	1080	3.67	30%	30%	20%						
15	F208	2	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	10600	0.92	5.73
	F208	5	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	26500	0.92	14.33
	MH70	11	C	35	30	1050	3.71	30%	30%	20%	0.281	1	4000	44000	0.90	10.62
	F208	1	C	35	30	1050	3.71	30%	30%	20%						
16	MH70	1	C	28	7	196	10.71	30%	30%	20%	0.115	1	4000	4000	0.90	2.12
17	F208	8	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	42400	0.92	22.92
	MH70	9	C	35	30	1050	3.71	30%	30%	20%	0.281	1	4000	36000	0.90	8.69
18	F208	4	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	21200	0.92	11.46
	F208	2	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	10600	0.92	5.73
	MH70	11	C	35	30	1050	3.71	30%	30%	20%	0.281	1	4000	44000	0.90	10.62
19	MH70	2	C	25	8	200	9.90	30%	30%	20%	0.117	1	4000	8000	0.90	4.22
20	MH70	2	C	25	9	225	9.07	30%	30%	20%	0.135	1	4000	8000	0.90	4.33
21	MH70	2	C	30	15	450	6.00	30%	30%	20%	0.199	1	4000	8000	0.90	3.19
	F208	1	C	30	15	450	6.00	30%	30%	20%						
R1	MH70	2	R	50	8	400	3.63	30%	30%	20%	0.285	1	4000	8000	0.90	5.14
R2	MH70	27	R	111	8	888	3.35	30%	30%	20%	0.299	1	4000	108000	0.90	32.80
R3	MH70	3	R	57	8	456	3.56	30%	30%	20%	0.288	1	4000	12000	0.90	6.84
R4	MH70	11	R	130	8	1040	3.32	30%	30%	20%	0.301	1	4000	44000	0.90	11.49

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	2	C	19	13	247	7.77	30%	30%	20%	0.245	1	5450	10900	0.94	10.17
2	HP70	2	C	19	9	171	9.82	30%	30%	20%	0.184	1	5450	10900	0.94	11.04
3	F208	5	B	37	21	777	1.87	30%	10%	20%	0.590	2	2650	26500	0.92	18.54
	HP70	7	C	37	21	777	4.48	30%	30%	20%	0.389	1	5450	38150	0.94	17.97
4	F208	7	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	27.35
	HP70	7	C	35	21	735	4.57	30%	30%	20%	0.384	1	5450	38150	0.94	18.75
5	F208	4	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	21200	0.92	15.63
	F208	3	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	15900	0.92	11.72
	HP70	7	C	35	21	735	4.57	30%	30%	20%	0.384	1	5450	38150	0.94	18.75
6	F208	7	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	27.35
	F208	1	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	5300	0.92	3.91
	HP70	8	C	35	21	735	4.57	30%	30%	20%	0.384	1	5450	43600	0.94	21.43
7	F208	8	B	21	19	399	2.51	30%	10%	20%	0.549	2	2650	42400	0.92	53.77
	HP70	5	C	21	19	399	6.02	30%	30%	20%	0.311	1	5450	27250	0.94	19.98
8	F208	7	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	27.35
	F208	1	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	5300	0.92	3.91
	HP70	9	C	35	21	735	4.57	30%	30%	20%	0.384	1	5450	49050	0.94	24.11
9	F208	6	B	37	21	777	1.87	30%	10%	20%	0.590	2	2650	31800	0.92	22.25
	F208	2	B	37	21	777	1.87	30%	10%	20%	0.590	2	2650	10600	0.92	7.42
	HP70	4	C	37	21	777	4.48	30%	30%	20%	0.389	1	5450	21800	0.94	10.27
10	F208	4	B	30	19	570	2.15	30%	10%	20%	0.571	2	2650	21200	0.92	19.57
	HP70	3	C	30	19	570	5.16	30%	30%	20%	0.350	1	5450	16350	0.94	9.45
11	F208	4	B	30	18	540	2.22	30%	10%	20%	0.567	2	2650	21200	0.92	20.51
	HP70	3	C	30	18	540	5.33	30%	30%	20%	0.342	1	5450	16350	0.94	9.74
12	F208	6	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	31800	0.92	17.19
	F208	2	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	10600	0.92	5.73
	HP70	8	C	35	30	1050	3.71	30%	30%	20%	0.442	1	5450	43600	0.94	17.27
13	F208	3	B	30	18	540	2.22	30%	10%	20%	0.567	2	2650	15900	0.92	15.39
	F208	5	B	30	18	540	2.22	30%	10%	20%	0.567	2	2650	26500	0.92	25.64
	HP70	11	C	30	18	540	5.33	30%	30%	20%	0.342	1	5450	59950	0.94	35.72

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
14	F208	1	B	36	30	1080	1.53	30%	10%	20%	0.618	2	2650	5300	0.92	2.80
	F208	7	B	36	30	1080	1.53	30%	10%	20%	0.618	2	2650	37100	0.92	19.57
	HP70	11	C	36	30	1080	3.67	30%	30%	20%	0.445	1	5450	59950	0.94	23.24
	F208	1	C	36	30	1080	3.67	30%	30%	20%						
15	F208	2	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	10600	0.92	5.73
	F208	5	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	26500	0.92	14.33
	HP70	11	C	35	30	1050	3.71	30%	30%	20%	0.442	1	5450	59950	0.94	23.74
	F208	1	C	35	30	1050	3.71	30%	30%	20%						
16	HP70	1	C	28	7	196	10.71	30%	30%	20%	0.178	1	5450	5450	0.94	4.66
17	F208	8	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	42400	0.92	22.92
	HP70	9	C	35	30	1050	3.71	30%	30%	20%	0.442	1	5450	49050	0.94	19.43
18	F208	4	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	21200	0.92	11.46
	F208	2	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	10600	0.92	5.73
	HP70	11	C	35	30	1050	3.71	30%	30%	20%	0.442	1	5450	59950	0.94	23.74
19	HP70	2	C	25	8	200	9.90	30%	30%	20%	0.181	1	5450	10900	0.94	9.28
20	HP70	2	C	25	9	225	9.07	30%	30%	20%	0.208	1	5450	10900	0.94	9.48
21	HP70	2	C	30	15	450	6.00	30%	30%	20%	0.312	1	5450	10900	0.94	7.11
	F208	1	C	30	15	450	6.00	30%	30%	20%						
R1	HP50	2	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	7200	0.94	7.59
R2	HP50	27	R	111	8	888	3.35	30%	30%	20%	0.470	1	3600	97200	0.94	48.41
R3	HP50	3	R	57	8	456	3.56	30%	30%	20%	0.453	1	3600	10800	0.94	10.09
R4	HP50	11	R	130	8	1040	3.32	30%	30%	20%	0.472	1	3600	39600	0.94	16.91

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F	
1	MH70	2	C	19	13	247	7.77	30%	30%	20%	0.157	1	4000	8000	0.90	4.59
2	MH70	2	C	19	9	171	9.82	30%	30%	20%	0.119	1	4000	8000	0.90	5.02
3	F312	5	B	37	21	777	1.87	30%	10%	20%	0.521	3	2570	38550	0.92	23.82
	MH70	7	C	37	21	777	4.48	30%	30%	20%	0.247	1	4000	28000	0.90	8.03
4	F312	7	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	53970	0.92	35.12
	MH70	7	C	35	21	735	4.57	30%	30%	20%	0.244	1	4000	28000	0.90	8.39
5	F312	4	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	30840	0.92	20.07
	F312	3	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	23130	0.92	15.05
	MH70	7	C	35	21	735	4.57	30%	30%	20%	0.244	1	4000	28000	0.90	8.39
6	F312	7	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	53970	0.92	35.12
	F312	1	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	7710	0.92	5.02
	MH70	8	C	35	21	735	4.57	30%	30%	20%	0.244	1	4000	32000	0.90	9.58
7	F312	8	B	21	19	399	2.51	30%	10%	20%	0.478	3	2570	61680	0.92	68.10
	MH70	5	C	21	19	399	6.02	30%	30%	20%	0.199	1	4000	20000	0.90	9.00
8	F312	7	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	53970	0.92	35.12
	F312	1	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	7710	0.92	5.02
	MH70	9	C	35	21	735	4.57	30%	30%	20%	0.244	1	4000	36000	0.90	10.78
9	F312	6	B	37	21	777	1.87	30%	10%	20%	0.521	3	2570	46260	0.92	28.59
	F312	2	B	37	21	777	1.87	30%	10%	20%	0.521	3	2570	15420	0.92	9.53
	MH70	4	C	37	21	777	4.48	30%	30%	20%	0.247	1	4000	16000	0.90	4.59
10	F312	4	B	30	19	570	2.15	30%	10%	20%	0.501	3	2570	30840	0.92	24.98
	MH70	3	C	30	19	570	5.16	30%	30%	20%	0.223	1	4000	12000	0.90	4.24
11	F312	4	B	30	18	540	2.22	30%	10%	20%	0.497	3	2570	30840	0.92	26.16
	MH70	3	C	30	18	540	5.33	30%	30%	20%	0.218	1	4000	12000	0.90	4.37
12	F312	6	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	46260	0.92	22.13
	F312	2	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	15420	0.92	7.38
	MH70	8	C	35	30	1050	3.71	30%	30%	20%	0.281	1	4000	32000	0.90	7.73
13	F312	3	B	30	18	540	2.22	30%	10%	20%	0.497	3	2570	23130	0.92	19.62
	F312	5	B	30	18	540	2.22	30%	10%	20%	0.497	3	2570	38550	0.92	32.70
	MH70	11	C	30	18	540	5.33	30%	30%	20%	0.218	1	4000	44000	0.90	16.02

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
14	F312	1	B	36	30	1080	1.53	30%	10%	20%	0.547	3	2570	7710	0.92	3.60
	F312	7	B	36	30	1080	1.53	30%	10%	20%	0.547	3	2570	53970	0.92	25.19
	MH70	11	C	36	30	1080	3.67	30%	30%	20%	0.283	1	4000	44000	0.90	10.40
	F312	1	C	36	30	1080	3.67	30%	30%	20%						
15	F312	2	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	15420	0.92	7.38
	F312	5	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	38550	0.92	18.44
	MH70	11	C	35	30	1050	3.71	30%	30%	20%	0.281	1	4000	44000	0.90	10.62
	F312	1	C	35	30	1050	3.71	30%	30%	20%						
16	MH70	1	C	28	7	196	10.71	30%	30%	20%	0.115	1	4000	4000	0.90	2.12
17	F312	8	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	61680	0.92	29.50
	MH70	9	C	35	30	1050	3.71	30%	30%	20%	0.281	1	4000	36000	0.90	8.69
18	F312	4	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	30840	0.92	14.75
	F312	2	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	15420	0.92	7.38
	MH70	11	C	35	30	1050	3.71	30%	30%	20%	0.281	1	4000	44000	0.90	10.62
19	MH70	2	C	25	8	200	9.90	30%	30%	20%	0.117	1	4000	8000	0.90	4.22
20	MH70	2	C	25	9	225	9.07	30%	30%	20%	0.135	1	4000	8000	0.90	4.33
21	MH70	2	C	30	15	450	6.00	30%	30%	20%	0.199	1	4000	8000	0.90	3.19
	F312	1	C	30	15	450	6.00	30%	30%	20%						
R1	MH70	2	R	50	8	400	3.63	30%	30%	20%	0.285	1	4000	8000	0.90	5.14
R2	MH70	27	R	111	8	888	3.35	30%	30%	20%	0.299	1	4000	108000	0.90	32.80
R3	MH70	3	R	57	8	456	3.56	30%	30%	20%	0.288	1	4000	12000	0.90	6.84
R4	MH70	11	R	130	8	1040	3.32	30%	30%	20%	0.301	1	4000	44000	0.90	11.49

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	2	C	19	13	247	7.77	30%	30%	20%	0.245	1	5450	10900	0.94	10.17
2	HP70	2	C	19	9	171	9.82	30%	30%	20%	0.184	1	5450	10900	0.94	11.04
3	F312	5	B	37	21	777	1.87	30%	10%	20%	0.521	3	2570	38550	0.92	23.82
	HP70	7	C	37	21	777	4.48	30%	30%	20%	0.389	1	5450	38150	0.94	17.97
4	F312	7	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	53970	0.92	35.12
	HP70	7	C	35	21	735	4.57	30%	30%	20%	0.384	1	5450	38150	0.94	18.75
5	F312	4	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	30840	0.92	20.07
	F312	3	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	23130	0.92	15.05
	HP70	7	C	35	21	735	4.57	30%	30%	20%	0.384	1	5450	38150	0.94	18.75
6	F312	7	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	53970	0.92	35.12
	F312	1	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	7710	0.92	5.02
	HP70	8	C	35	21	735	4.57	30%	30%	20%	0.384	1	5450	43600	0.94	21.43
7	F312	8	B	21	19	399	2.51	30%	10%	20%	0.478	3	2570	61680	0.92	68.10
	HP70	5	C	21	19	399	6.02	30%	30%	20%	0.311	1	5450	27250	0.94	19.98
8	F312	7	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	53970	0.92	35.12
	F312	1	B	35	21	735	1.90	30%	10%	20%	0.519	3	2570	7710	0.92	5.02
	HP70	9	C	35	21	735	4.57	30%	30%	20%	0.384	1	5450	49050	0.94	24.11
9	F312	6	B	37	21	777	1.87	30%	10%	20%	0.521	3	2570	46260	0.92	28.59
	F312	2	B	37	21	777	1.87	30%	10%	20%	0.521	3	2570	15420	0.92	9.53
	HP70	4	C	37	21	777	4.48	30%	30%	20%	0.389	1	5450	21800	0.94	10.27
10	F312	4	B	30	19	570	2.15	30%	10%	20%	0.501	3	2570	30840	0.92	24.98
	HP70	3	C	30	19	570	5.16	30%	30%	20%	0.350	1	5450	16350	0.94	9.45
11	F312	4	B	30	18	540	2.22	30%	10%	20%	0.497	3	2570	30840	0.92	26.16
	HP70	3	C	30	18	540	5.33	30%	30%	20%	0.342	1	5450	16350	0.94	9.74
12	F312	6	B	35	30	1050	1.55	30%	10%	20%	0.575	3	2570	46260	0.92	23.35
	F312	2	B	35	30	1050	1.55	30%	10%	20%	0.575	3	2570	15420	0.92	7.78
	HP70	8	C	35	30	1050	3.71	30%	30%	20%	0.442	1	5450	43600	0.94	17.27
13	F312	3	B	30	18	540	2.22	30%	10%	20%	0.497	3	2570	23130	0.92	19.62
	F312	5	B	30	18	540	2.22	30%	10%	20%	0.497	3	2570	38550	0.92	32.70
	HP70	11	C	30	18	540	5.33	30%	30%	20%	0.342	1	5450	59950	0.94	35.72

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
14	F312	1	B	36	30	1080	1.53	30%	10%	20%	0.547	3	2570	7710	0.92	3.60
	F312	7	B	36	30	1080	1.53	30%	10%	20%	0.547	3	2570	53970	0.92	25.19
	HP70	11	C	36	30	1080	3.67	30%	30%	20%	0.445	1	5450	59950	0.94	23.24
	F312	1	C	36	30	1080	3.67	30%	30%	20%						
15	F312	2	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	15420	0.92	7.38
	F312	5	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	38550	0.92	18.44
	HP70	11	C	35	30	1050	3.71	30%	30%	20%	0.442	1	5450	59950	0.94	23.74
	F312	1	C	35	30	1050	3.71	30%	30%	20%						
16	HP70	1	C	28	7	196	10.71	30%	30%	20%	0.178	1	5450	5450	0.94	4.66
17	F312	8	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	61680	0.92	29.50
	HP70	9	C	35	30	1050	3.71	30%	30%	20%	0.442	1	5450	49050	0.94	19.43
18	F312	4	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	30840	0.92	14.75
	F312	2	B	35	30	1050	1.55	30%	10%	20%	0.545	3	2570	15420	0.92	7.38
	HP70	11	C	35	30	1050	3.71	30%	30%	20%	0.442	1	5450	59950	0.94	23.74
19	HP70	2	C	25	8	200	9.90	30%	30%	20%	0.181	1	5450	10900	0.94	9.28
20	HP70	2	C	25	9	225	9.07	30%	30%	20%	0.208	1	5450	10900	0.94	9.48
21	HP70	2	C	30	15	450	6.00	30%	30%	20%	0.312	1	5450	10900	0.94	7.11
	F312	1	C	30	15	450	6.00	30%	30%	20%						
R1	HP50	2	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	7200	0.94	7.59
R2	HP50	27	R	111	8	888	3.35	30%	30%	20%	0.470	1	3600	97200	0.94	48.41
R3	HP50	3	R	57	8	456	3.56	30%	30%	20%	0.453	1	3600	10800	0.94	10.09
R4	HP50	11	R	130	8	1040	3.32	30%	30%	20%	0.472	1	3600	39600	0.94	16.91

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	2	C	19	13	247	7.77	30%	30%	20%	0.245	1	3600	7200	0.94	6.72
2	HP50	2	C	19	9	171	9.82	30%	30%	20%	0.184	1	3600	7200	0.94	7.29
3	F208	5	B	37	21	777	1.87	30%	10%	20%	0.590	2	2650	26500	0.92	18.54
	HP50	7	C	37	21	777	4.48	30%	30%	20%	0.389	1	3600	25200	0.94	11.87
4	F208	7	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	27.35
	HP50	7	C	35	21	735	4.57	30%	30%	20%	0.384	1	3600	25200	0.94	12.39
5	F208	4	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	21200	0.92	15.63
	F208	3	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	15900	0.92	11.72
	HP50	7	C	35	21	735	4.57	30%	30%	20%	0.384	1	3600	25200	0.94	12.39
6	F208	7	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	27.35
	F208	1	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	5300	0.92	3.91
	HP50	8	C	35	21	735	4.57	30%	30%	20%	0.384	1	3600	28800	0.94	14.16
7	F208	8	B	21	19	399	2.51	30%	10%	20%	0.549	2	2650	42400	0.92	53.77
	HP50	5	C	21	19	399	6.02	30%	30%	20%	0.311	1	3600	18000	0.94	13.20
8	F208	7	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	37100	0.92	27.35
	F208	1	B	35	21	735	1.90	30%	10%	20%	0.588	2	2650	5300	0.92	3.91
	HP50	9	C	35	21	735	4.57	30%	30%	20%	0.384	1	3600	32400	0.94 *	15.93
9	F208	6	B	37	21	777	1.87	30%	10%	20%	0.590	2	2650	31800	0.92	22.25
	F208	2	B	37	21	777	1.87	30%	10%	20%	0.590	2	2650	10600	0.92	7.42
	HP50	4	C	37	21	777	4.48	30%	30%	20%	0.389	1	3600	14400	0.94	6.78
10	F208	4	B	30	19	570	2.15	30%	10%	20%	0.571	2	2650	21200	0.92	19.57
	HP50	3	C	30	19	570	5.16	30%	30%	20%	0.350	1	3600	10800	0.94	6.24
11	F208	4	B	30	18	540	2.22	30%	10%	20%	0.567	2	2650	21200	0.92	20.51
	HP50	3	C	30	18	540	5.33	30%	30%	20%	0.342	1	3600	10800	0.94	6.44
12	F208	6	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	31800	0.92	17.19
	F208	2	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	10600	0.92	5.73
	HP50	8	C	35	30	1050	3.71	30%	30%	20%	0.442	1	3600	28800	0.94	11.41
13	F208	3	B	30	18	540	2.22	30%	10%	20%	0.567	2	2650	15900	0.92	15.39
	F208	5	B	30	18	540	2.22	30%	10%	20%	0.567	2	2650	26500	0.92	25.64
	HP50	11	C	30	18	540	5.33	30%	30%	20%	0.342	1	3600	39600	0.94	23.60

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
14	F208	1	B	36	30	1080	1.53	30%	10%	20%	0.618	2	2650	5300	0.92	2.80
	F208	7	B	36	30	1080	1.53	30%	10%	20%	0.618	2	2650	37100	0.92	19.57
	HP50	11	C	36	30	1080	3.67	30%	30%	20%	0.445	1	3600	39600	0.94	15.35
	F208	1	C	36	30	1080	3.67	30%	30%	20%						
15	F208	2	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	10600	0.92	5.73
	F208	5	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	26500	0.92	14.33
	HP50	11	C	35	30	1050	3.71	30%	30%	20%	0.442	1	3600	39600	0.94	15.68
	F208	1	C	35	30	1050	3.71	30%	30%	20%						
16	HP50	1	C	28	7	196	10.71	30%	30%	20%	0.178	1	3600	3600	0.94	3.08
17	F208	8	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	42400	0.92	22.92
	HP50	9	C	35	30	1050	3.71	30%	30%	20%	0.442	1	3600	32400	0.94	12.83
18	F208	4	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	21200	0.92	11.46
	F208	2	B	35	30	1050	1.55	30%	10%	20%	0.616	2	2650	10600	0.92	5.73
	HP50	11	C	35	30	1050	3.71	30%	30%	20%	0.442	1	3600	39600	0.94	15.68
19	HP50	2	C	25	8	200	9.90	30%	30%	20%	0.181	1	3600	7200	0.94	6.13
20	HP50	2	C	25	9	225	9.07	30%	30%	20%	0.208	1	3600	7200	0.94	6.26
21	HP50	2	C	30	15	450	6.00	30%	30%	20%	0.312	1	3600	7200	0.94	4.70
	F208	1	C	30	15	450	6.00	30%	30%	20%						
R1	HP50	2	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	7200	0.94	7.59
R2	HP50	27	R	111	8	888	3.35	30%	30%	20%	0.470	1	3600	97200	0.94	48.41
R3	HP50	3	R	57	8	456	3.56	30%	30%	20%	0.453	1	3600	10800	0.94	10.09
R4	HP50	11	R	130	8	1040	3.32	30%	30%	20%	0.472	1	3600	39600	0.94	16.91

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
2	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
3	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
4	I200	9	B	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
5	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
6	I200	12	B	2496	1	700	42.8	$427	0.0	$0	4.0	$63	$489
	F212	2	B	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
	I200	12	C	2496	1	700	42.8	$427	0.0	$0	4.0	$63	$489
7	F312	12	B	2496	3	14000	2.1	$54	0.2	$22	4.0	$75	$151
	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
8	I200	10	B	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
9	I200	9	B	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
	F212	3	B	2496	2	14000	0.5	$10	0.1	$4	1.0	$19	$33
	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
10	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
11	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
12	F212	6	B	2496	2	14000	1.1	$20	0.1	$9	2.0	$38	$66
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
	I200	12	C	2496	1	700	42.8	$427	0.0	$0	4.0	$63	$489
13	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88
	I200	16	C	2496	1	700	57.1	$569	0.0	$0	5.3	$84	$653
Page Total		218						$6,185		$86		$1,195	$7,466

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
14	I200	2	B	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F312	10	B	2496	3	14000	1.8	$45	0.2	$18	3.3	$63	$126
	I200	16	C	2496	1	700	57.1	$569	0.0	$0	5.3	$84	$653
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
15	I200	2	B	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88
	I200	16	C	2496	1	700	57.1	$569	0.0	$0	5.3	$84	$653
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
16	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
17	I200	12	B	2496	1	700	42.8	$427	0.0	$0	4.0	$63	$489
	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
18	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F212	3	B	2496	2	14000	0.5	$10	0.1	$4	1.0	$19	$33
	I200	16	C	2496	1	700	57.1	$569	0.0	$0	5.3	$84	$653
19	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
20	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
21	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
R1	I200	2	R	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
R2	I200	27	R	2496	1	700	96.3	$960	0.0	$0	9.0	$141	$1,101
R3	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
R4	I200	11	R	2496	1	700	39.2	$391	0.0	$0	3.7	$58	$449
Page Total		159						$4,935		$40		$857	$5,833
Building Total		377						$11,121		$126		$2,052	$13,299

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
2	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$152
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
4	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$294
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
5	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$32
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
6	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$416
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$12
	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
7	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$68
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
8	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$335
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
9	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$305
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$12
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
10	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
11	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
12	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$4
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
13	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$213
	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$36
	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
Page Total		151						$2,532		$396		$1,134	$4,062	$3,404

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
14	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$53
	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
15	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$36
	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
16	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
17	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$406
	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
18	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$12
	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
19	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
20	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
21	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
R1	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
R2	MH70	27	R	2496	1	5250	12.8	$832	0.5	$97	9.0	$235	$1,165	($64)
R3	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
R4	MH70	11	R	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	($26)
Page Total		124						$2,917		$383		$1,003	$4,304	$1,529
Building Total		275						$5,449		$779		$2,138	$8,366	$4,933

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
2	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$152
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
4	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$294
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
5	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$32
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
6	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$416
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$12
	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
7	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$68
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
8	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$335
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
9	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$305
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$12
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
10	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
11	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
12	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$4
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
13	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$213
	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$36
	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
Page Total		151						$636		$405		$1,134	$2,175	$5,291

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
14	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$53
	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
15	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$36
	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
16	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
17	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$406
	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
18	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$12
	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
19	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
20	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
21	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
R1	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
R2	HP50	27	R	2496	1	16800	4.0	$174	0.5	$97	9.0	$235	$507	$594
R3	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
R4	HP50	11	R	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$242
Page Total		124						$646		$389		$1,003	$2,039	$3,794
Building Total		275						$1,282		$794		$2,138	$4,214	$9,085

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
2	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$141
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
4	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$279
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
5	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$25
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
6	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$401
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$9
	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
7	F312	8	B	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$50
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
8	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$320
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
9	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$291
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$8
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
10	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
11	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
12	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	($10)
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
13	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$207
	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$25
	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
Page Total		151						$2,683		$409		$1,134	$4,226	$3,240

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
14	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$38
	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
15	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$56
	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$25
	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
16	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
17	F312	8	B	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$389
	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
18	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$8
	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
19	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
20	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
21	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
R1	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
R2	MH70	27	R	2496	1	5250	12.8	$832	0.5	$97	9.0	$235	$1,165	($64)
R3	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
R4	MH70	11	R	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	($26)
Page Total		124						$2,982		$389		$1,003	$4,374	$1,459
Building Total		275						$5,665		$797		$2,138	$8,600	$4,699

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
2	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$141
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
4	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$279
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
5	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$25
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
6	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$401
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$9
	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
7	F312	8	B	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$50
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
8	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$320
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
9	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$291
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$8
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
10	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
11	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
12	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	($10)
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
13	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$207
	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$25
	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
Page Total		151						$787		$418		$1,134	$2,339	$5,127

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
14	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
	F312	7	B	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$38
	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
15	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$56
	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$25
	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
16	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
17	F312	8	B	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$389
	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
18	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$8
	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
19	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
20	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
21	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
R1	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
R2	HP50	27	R	2496	1	16800	4.0	$174	0.5	$97	9.0	$235	$507	$594
R3	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
R4	HP50	11	R	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$242
Page Total		124						$711		$395		$1,003	$2,109	$3,724
Building Total		275						$1,498		$812		$2,138	$4,448	$8,851

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
2	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
3	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$152
	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
4	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$294
	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
5	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$32
	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
6	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$416
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$12
	HP50	8	C	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$339
7	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$68
	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
8	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$335
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
9	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$305
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$12
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
10	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
11	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
12	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$4
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	HP50	8	C	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$339
13	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$213
	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$36
	HP50	11	C	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$446
Page Total		151						$679		$396		$1,134	$2,209	$5,257

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
14	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
	F208	7	B	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$53
	HP50	11	C	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$446
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
15	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$36
	HP50	11	C	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$446
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
16	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
17	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$406
	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
18	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$12
	HP50	11	C	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$446
19	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
20	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
21	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
R1	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
R2	HP50	27	R	2496	1	16800	4.0	$174	0.5	$97	9.0	$235	$507	$594
R3	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
R4	HP50	11	R	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$242
Page Total		124						$674		$383		$1,003	$2,061	$3,772
Building Total		275						$1,353		$779		$2,138	$4,270	$9,029

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	3	7-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
1A	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
1B	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
2	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	4	7-0	B		365	34	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	1	9-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
3	I200	5	9-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	I200	4	7-0	B		380	35	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
4	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	5	7-0	B	32	350	33	200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	F312	1	9-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
5	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	4	7-0	B		250	23	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
6	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	4	7-0	B				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	1	9-0	C		490	46	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
7	I200	4	9-0	C		200	19	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	4	7-0	B		250	23	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
8	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	3	7-0	B		360	33	132	0.40	$133	$14	$42	F312	2	132	0.26	$1,393	F312	5	48	52	988	659	1,647	$1,581
9	I200	5	9-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	F312	4	7-0	B	36	275	26	132	0.53	$177	$18	$56	F312	2	132	0.26	$1,393	F312	6	48	52	1,318	659	1,977	$1,644
10	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	3	8-0	B				132	0.40	$133	$14	$42	F312	2	132	0.26	$1,393	F312	5	48	52	988	659	1,647	$1,581
11	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	1	7-0	B				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F312	2	7-0	B				132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
12	F312	1	9-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
	F312	2	7-0	B				132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
	I200	1	7-0	B				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
13	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	3	7-0	B	36	200	19	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
13A	I200	2	8-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
13B	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
14	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	2	7-0	B				132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
New Panel																	$1,500								$1,500
Page Total		107							20.04	$3,121	$90	$1,512		55		10.39	$40,367		162			50,020	25,928	75,948	$45,090

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Existing Fixtures												Upgrade Fixtures					Baseline Total							
Room No.	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
15	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	3	7-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
15A	F312	1	7-6	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
16	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	3	7-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	1	7-0	B				132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
17	I200	3	11-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	4	7-0	B				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
18	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	4	7-0	B	36	195	18	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
19	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	4	7-0	B	36	225	21	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
20	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	3	7-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	1	7-0	B				132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
	F312	1	6-6	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
21	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	1	9-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
	F312	2	7-0	B				132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
22	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	1	9-0	B				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F312	2	7-6	B				132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
	F312	1	6-6	B		400	37	132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
23	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	4	7-0	B		730	68	132	0.53	$177	$18	$56	F312	2	132	0.26	$1,393	F312	6	48	52	1,318	659	1,977	$1,644
24	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	1	9-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
	F312	4	7-0	B				132	0.53	$177	$18	$56	F312	2	132	0.26	$1,393	F312	6	48	52	1,318	659	1,977	$1,644
25	I200	2	10-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	4	7-6	B		350	33	132	0.53	$177	$18	$56	F312	2	132	0.26	$1,393	F312	6	48	52	1,318	659	1,977	$1,644
26	I200	4	10-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	3	7-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
27	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
28	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
29	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
30	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
31	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
32	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
Page Total		82							14.84	$2,534	$104	$1,157		47		8.65	$33,173		129			37,031	21,595	58,626	$36,968

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
RN	I200	4	8-0	R				200	0.80	$103	$0	$57	I200	0	200	0.00	$0	I200	4	48	52	1,997	0	1,997	$159
	I200	2	7-0	R				200	0.40	$51	$0	$28	I200	0	200	0.00	$0	I200	2	48	52	998	0	998	$80
RW	I200	12	10-0	R				200	2.40	$308	$0	$170	I200	0	200	0.00	$0	I200	12	48	52	5,990	0	5,990	$478
33	F312	2	11-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	I200	17	14-0	C	36	275	26	200	3.40	$437	$0	$241	I200	7	200	1.40	$4,961	I200	24	48	52	8,486	3,494	11,981	$5,639
34	F312	4	9-0	C				132	0.53	$177	$18	$56	F312	0	132	0.00	$0	F312	4	48	52	1,318	0	1,318	$251
	F312	2	7-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	I200	15	9-0	C				200	3.00	$385	$0	$213	I200	6	200	1.20	$4,252	I200	21	48	52	7,488	2,995	10,483	$4,850
	I200	4	7-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
35	I200	5	9-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
36	I200	12	9-0	C	38	150	14	200	2.40	$308	$0	$170	I200	5	200	1.00	$3,544	I200	17	48	52	5,990	2,496	8,486	$4,022
37	HP10	2	8-0	L				136	0.27	$139	$19	$25	HP10	0	136	0.00	$0	HP10	2	48	52	679	0	679	$184
	MV10	2	8-0	L				127	0.25	$108	$19	$23	MV10	0	127	0.00	$0	MV10	2	48	52	634	0	634	$149
38	I200	5	9-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
39	I200	1	6-6	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
40	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
41	I200	8	9-0	C				200	1.60	$206	$0	$113	I200	4	200	0.80	$2,835	I200	12	48	52	3,994	1,997	5,990	$3,154
42	I200	3	10-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	1	8-0	C		460	43	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
43	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F312	2	9-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
44	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
45	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
46	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
47	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
48	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
49	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
50	I200	3	11-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
51	I200	2	13-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
52	I200	2	13-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
53	I200	2	13-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
54	I200	2	13-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
55	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
56	I200	5	9-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
RE	I200	3	9-0	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
Page Total		142							27.45	$3,978	$83	$2,002		54		10.80	$38,270		196			68,505	26,957	95,462	$44,332
Building Total		331							62.32	$9,634	$276	$4,670		156		29.84	$111,810		487			155,556	74,481	230,036	$126,390

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
1A	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
1B	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
2	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	6	B	365	34	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
3	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	I200	6	B	380	35	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
4	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	7	B	350	33	200	1.40	$1,617	F208	4		62	0.25	$2,785	48	52	3,494	619	2,875	($1,169)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
5	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	6	B	250	23	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
6	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	1	C	490	46	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
7	I200	6	C	200	19	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	6	B	250	23	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
8	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	5	B	360	33	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
9	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	F312	6	B	275	26	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
10	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	5	B			132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
11	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	2	B			200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
12	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	I200	2	B			200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
13	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	I200	5	B	200	19	200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
13A	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
13B	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
14	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	F312	3	B			132	0.40	$822	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,267)
New Panel								$1,500												$1,500
Page Total		162					30.43	$45,090		111			8.34	$69,624			75,948	20,817	55,132	($24,534)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	B			200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
15A	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
16	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
17	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
18	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B	195	18	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
19	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B	225	21	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
20	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
21	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	3	B			132	0.40	$822	F208	4		62	0.25	$2,785	48	52	988	619	369	($1,964)
22	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	F312	2	B	400	37	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
23	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	6	B	730	68	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
24	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	6	B			132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
25	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	6	B	350	33	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
26	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,288	48	52	2,995	889	2,107	($711)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
27	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
28	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
29	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
30	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
31	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
32	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
Page Total		129					23.49	$36,968		85			6.19	$54,452			58,626	15,445	43,181	($17,485)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
RN	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
RW	I200	12	R			200	2.40	$478	MH70	12		89	1.07	$6,609	48	52	5,990	2,666	3,325	($6,131)
33	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	24	C	275	26	200	4.80	$5,639	MH70	17		89	1.51	$9,363	48	52	11,981	3,776	8,204	($3,724)
34	F312	4	C			132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	21	C			200	4.20	$4,850	MH70	15		89	1.34	$8,261	48	52	10,483	3,332	7,151	($3,411)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
35	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
36	I200	17	C	150	14	200	3.40	$4,022	MH70	12		89	1.07	$6,609	48	52	8,486	2,666	5,821	($2,587)
37	HP10	2	L			136	0.27	$184	HP10	2		136	0.27	$1,261	48	52	679	679	0	($1,077)
	MV10	2	L			127	0.25	$149	MH70	2		89	0.18	$1,102	48	52	634	444	190	($952)
38	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
39	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
40	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
41	I200	12	C			200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
42	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	2	C	460	43	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
43	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
44	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
45	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
46	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
47	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
48	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
49	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
50	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,716	48	52	2,496	666	1,830	($179)
51	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
52	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
53	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
54	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
55	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,716	48	52	2,496	666	1,830	($179)
56	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,860	48	52	3,494	1,111	2,384	($1,243)
RE	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,716	48	52	1,498	666	831	($1,596)
Page Total		196					38.25	$44,332		142			12.46	$80,334			95,462	31,105	64,357	($36,001)
Building Tota		487					92.16	$126,390		338			26.99	$204,410			230,036	67,367	162,669	($78,020)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
1A	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
1B	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
2	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	6	B	365	34	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
3	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	I200	6	B	380	35	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
4	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	7	B	350	33	200	1.40	$1,617	F208	4		62	0.25	$2,785	48	52	3,494	619	2,875	($1,169)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
5	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	6	B	250	23	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
6	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	1	C	490	46	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
7	I200	6	C	200	19	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	6	B	250	23	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
8	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	5	B	360	33	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
9	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	F312	6	B	275	26	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
10	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	5	B			132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
11	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	2	B			200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
12	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	I200	2	B			200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
13	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B	200	19	200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
13A	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
13B	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
14	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	3	B			132	0.40	$822	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,267)
New Panel								$1,500												$1,500
Page Total		162					30.43	$45,090		111			8.88	$73,006			75,948	22,164	53,784	($27,916)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B			200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
15A	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
16	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
17	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
18	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B	195	18	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
19	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B	225	21	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
20	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
21	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	3	B			132	0.40	$822	F208	4		62	0.25	$2,785	48	52	988	619	369	($1,964)
22	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	F312	2	B	400	37	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
23	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	6	B	730	68	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
24	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	6	B			132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
25	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	6	B	350	33	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
26	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
27	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
28	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
29	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
30	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
31	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
32	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
Page Total		129					23.49	$36,968		85			6.53	$56,489			58,626	16,294	42,332	($19,522)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
RN	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
RW	I200	12	R			200	2.40	$478	HP50	12		58	0.70	$7,240	48	52	5,990	1,737	4,253	($6,761)
33	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	24	C	275	26	200	4.80	$5,639	HP70	17		99	1.68	$10,488	48	52	11,981	4,201	7,780	($4,849)
34	F312	4	C			132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	21	C			200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,707	6,777	($4,404)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
35	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
36	I200	17	C	150	14	200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,965	5,521	($3,381)
37	HP10	2	L			136	0.27	$184	HP10	2		136	0.27	$1,261	48	52	679	679	0	($1,077)
	MV10	2	L			127	0.25	$149	HP70	2		99	0.20	$1,234	48	52	634	494	140	($1,085)
38	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
39	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
40	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
41	I200	12	C			200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
42	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	2	C	460	43	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
43	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
44	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
45	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
46	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
47	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
48	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
49	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
50	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
51	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
52	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
53	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
54	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
55	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
56	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
RE	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Page Total		196					38.25	$44,332		142			12.90	$88,139			95,462	32,201	63,261	($43,807)
Building Total		487					92.16	$126,390		338			28.31	$217,635			230,036	70,659	159,377	($91,245)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
1A	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
1B	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
2	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	6	B	365	34	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
3	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	I200	6	B	380	35	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
4	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	7	B	350	33	200	1.40	$1,617	F312	4		132	0.53	$2,785	48	52	3,494	1,318	2,177	($1,169)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
5	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	6	B	250	23	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
6	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	6	B			200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	F312	1	C	490	46	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
7	I200	6	C	200	19	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	6	B	250	23	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
8	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	5	B	360	33	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
9	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	F312	6	B	275	26	132	0.79	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
10	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	5	B			132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
11	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	2	B			200	0.40	$749	F312	2		132	0.26	$1,393	48	52	998	659	339	($644)
	F312	3	B			132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
12	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	F312	3	B			132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
	I200	2	B			200	0.40	$749	F312	2		132	0.26	$1,393	48	52	998	659	339	($644)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
13	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	B	200	19	200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
13A	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
13B	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
14	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	3	B			132	0.40	$822	F312	3		132	0.40	$2,089	48	52	988	988	0	($1,267)
New Panel								$1,500												$1,500
Page Total		162					30.43	$45,090		107			12.33	$66,898			75,948	30,776	45,173	($21,809)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	B			200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
15A	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
16	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
17	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	6	B			200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
18	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B	195	18	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
19	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	6	B	225	21	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
20	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
21	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	F312	3	B			132	0.40	$822	F312	4		132	0.53	$2,785	48	52	988	1,318	(329)	($1,964)
22	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	2	B			200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
	F312	3	B			132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
	F312	2	B	400	37	132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
23	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	6	B	730	68	132	0.79	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
24	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	F312	6	B			132	0.79	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
25	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	6	B	350	33	132	0.79	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
26	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
27	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
28	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
29	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
30	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
31	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
32	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
Page Total		129					23.49	$36,968		81			9.76	$51,705			58,626	24,356	34,270	($14,738)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
RN	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
RW	I200	12	R			200	2.40	$478	MH70	12		89	1.07	$6,609	48	52	5,990	2,666	3,325	($6,131)
33	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	24	C	275	26	200	4.80	$5,639	MH70	17		89	1.51	$9,363	48	52	11,981	3,776	8,204	($3,724)
34	F312	4	C			132	0.53	$251	F312	0		132	0.53	$251	48	52	1,318	1,318	0	$0
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	21	C			200	4.20	$4,850	MH70	15		89	1.34	$8,261	48	52	10,483	3,332	7,151	($3,411)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
35	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
36	I200	17	C	150	14	200	3.40	$4,022	MH70	12		89	1.07	$6,609	48	52	8,486	2,666	5,821	($2,587)
37	HP10	2	L			136	0.27	$184	HP10	2		136	0.27	$1,261	48	52	679	679	0	($1,077)
	MV10	2	L			127	0.25	$149	MH70	2		89	0.18	$1,102	48	52	634	444	190	($952)
38	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
39	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
40	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
41	I200	12	C			200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
42	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	2	C	460	43	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
43	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
44	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
45	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
46	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
47	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
48	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
49	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
50	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
51	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
52	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
53	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
54	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
55	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
56	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
RE	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
Page Total		196					38.25	$44,332		132			13.16	$73,487			95,462	32,852	62,610	($29,155)
Building Tota		487					92.16	$126,390		320			35.25	$192,091			230,036	87,984	142,052	($65,701)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
1A	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
1B	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
2	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	6	B	365	34	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
3	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	I200	6	B	380	35	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
4	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	7	B	350	33	200	1.40	$1,617	F312	4		132	0.53	$2,785	48	52	3,494	1,318	2,177	($1,169)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
5	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	6	B	250	23	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
6	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	6	B			200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	F312	1	C	490	46	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
7	I200	6	C	200	19	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	6	B	250	23	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
8	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	5	B	360	33	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
9	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	F312	6	B	275	26	132	0.79	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
10	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	5	B			132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
11	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	2	B			200	0.40	$749	F312	2		132	0.26	$1,393	48	52	998	659	339	($644)
	F312	3	B			132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
12	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	F312	3	B			132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
	I200	2	B			200	0.40	$749	F312	2		132	0.26	$1,393	48	52	998	659	339	($644)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
13	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B	200	19	200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
13A	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
13B	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
14	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	B			132	0.26	$822	F312	3		132	0.40	$2,089	48	52	659	988	(329)	($1,267)
New Panel								$1,500												$1,500
Page Total		161					30.30	$45,090		107			12.87	$70,472			75,619	32,124	43,495	($25,382)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B			200	1.00	$1,537	F312	4		132	0.53	$2,785	48	52	2,496	1,318	1,178	($1,248)
15A	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
16	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
17	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	6	B			200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
18	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B	195	18	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
19	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	6	B	225	21	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
20	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
21	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	F312	3	B			132	0.40	$822	F312	4		132	0.53	$2,785	48	52	988	1,318	(329)	($1,964)
22	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	2	B			200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
	F312	3	B			132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
	F312	2	B	400	37	132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
23	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	6	B	730	68	132	0.79	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
24	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	F312	6	B			132	0.79	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
25	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	6	B	350	33	132	0.79	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
26	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
27	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
28	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
29	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
30	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
31	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
32	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
Page Total		129					23.49	$36,968		81			10.10	$53,955			58,626	25,205	33,421	($16,987)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
RN	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
RW	I200	12	R			200	2.40	$478	HP50	12		58	0.70	$7,240	48	52	5,990	1,737	4,253	($6,761)
33	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	24	C	275	26	200	4.80	$5,639	HP70	17		99	1.68	$10,488	48	52	11,981	4,201	7,780	($4,849)
34	F312	4	C			132	0.53	$251	F312	0		132	0.53	$251	48	52	1,318	1,318	0	$0
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	21	C			200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,707	6,777	($4,404)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
35	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
36	I200	17	C	150	14	200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,965	5,521	($3,381)
37	HP10	2	L			136	0.27	$184	HP10	2		136	0.27	$1,261	48	52	679	679	0	($1,077)
	MV10	2	L			127	0.25	$149	HP70	2		99	0.20	$1,234	48	52	634	494	140	($1,085)
38	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
39	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
40	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
41	I200	12	C			200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
42	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	2	C	460	43	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
43	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
44	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
45	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
46	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
47	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
48	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
49	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
50	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
51	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
52	I200	2	C			200	0.40	$788	HP70	2		99	0.20	$1,234	48	52	998	494	504	($445)
53	I200	2	C			200	0.40	$788	HP70	2		99	0.20	$1,234	48	52	998	494	504	($445)
54	I200	2	C			200	0.40	$788	HP70	2		99	0.20	$1,234	48	52	998	494	504	($445)
55	I200	3	C			200	0.60	$1,537	HP70	3		99	0.30	$1,851	48	52	1,498	741	756	($314)
56	I200	5	C			200	1.00	$1,617	HP70	5		99	0.50	$3,085	48	52	2,496	1,236	1,260	($1,468)
RE	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Page Total		189					36.85	$44,332		132			13.60	$81,803			91,968	33,948	58,020	($37,471)
Building Total		479					90.63	$126,390		320			36.57	$206,230			226,212	91,276	134,936	($79,840)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
1A	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
1B	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
2	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	6	B	365	34	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
3	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
	I200	6	B	380	35	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
4	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	7	B	350	33	200	1.40	$1,617	F208	4		62	0.25	$2,785	48	52	3,494	619	2,875	($1,169)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
5	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	I200	6	B	250	23	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
6	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F312	1	C	490	46	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
7	I200	6	C	200	19	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	6	B	250	23	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
8	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F312	5	B	360	33	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
9	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
	F312	6	B	275	26	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
10	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F312	5	B			132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
11	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	2	B			200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
12	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	I200	2	B			200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
13	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	5	B	200	19	200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
13A	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
13B	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
14	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	3	B			132	0.40	$822	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,267)
New Panel								$1,500												$1,500
Page Total		162					30.43	$45,090		111			6.67	$72,271			75,948	16,638	59,310	($27,181)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	5	B			200	1.00	$1,537	F208	4		62	0.25	$2,785	48	52	2,496	619	1,877	($1,248)
15A	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
16	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
17	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	I200	6	B			200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
18	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	6	B	195	18	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
19	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	6	B	225	21	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
20	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
21	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	3	B			132	0.40	$822	F208	4		62	0.25	$2,785	48	52	988	619	369	($1,964)
22	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
	F312	3	B			132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	F312	2	B	400	37	132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
23	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	6	B	730	68	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
24	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	6	B			132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
25	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	6	B	350	33	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
26	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
27	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
28	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
29	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
30	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
31	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
32	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
Page Total		129					23.49	$36,968		85			5.13	$56,026			58,626	12,814	45,812	($19,059)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
RN	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
RW	I200	12	R			200	2.40	$478	HP50	12		58	0.70	$7,240	48	52	5,990	1,737	4,253	($6,761)
33	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	24	C	275	26	200	4.80	$5,639	HP50	17		58	0.99	$10,256	48	52	11,981	2,461	9,520	($4,618)
34	F312	4	C			132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	21	C			200	4.20	$4,850	HP50	15		58	0.87	$9,050	48	52	10,483	2,172	8,312	($4,199)
	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
35	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
36	I200	17	C	150	14	200	3.40	$4,022	HP50	12		58	0.70	$7,240	48	52	8,486	1,737	6,749	($3,218)
37	HP10	2	L			136	0.27	$184	HP10	2		136	0.27	$1,261	48	52	679	679	0	($1,077)
	MV10	2	L			127	0.25	$149	HP50	2		58	0.12	$1,207	48	52	634	290	344	($1,057)
38	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
39	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
40	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
41	I200	12	C			200	2.40	$3,154	HP50	8		58	0.46	$4,826	48	52	5,990	1,158	4,832	($1,673)
42	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	I200	2	C	460	43	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
43	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
44	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
45	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
46	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
47	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
48	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
49	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
50	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
51	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
52	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
53	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
54	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
55	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
56	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
RE	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Page Total		196					38.25	$44,332		142			8.43	$86,655			95,462	21,046	74,416	($42,322)
Building Tota		487					92.16	$126,390		338			20.23	$214,952			230,036	50,499	179,537	($88,562)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	3	C	20	18	360	6.33	30%	30%	20%	0.227	1	3400	10200	0.86	5.56
	I200	5	B	20	18	360	2.64	30%	10%	20%	0.348	1	3400	17000	0.86	14.21
1A	I200	3	C	13	6	78	14.62	30%	30%	20%	0.140	1	3400	10200	0.86	15.83
1B	I200	2	C	5	6	30	22.00	30%	30%	20%	0.140	1	3400	6800	0.86	27.43
2	I200	6	C	26	18	468	5.64	30%	30%	20%	0.247	1	3400	20400	0.86	9.31
	I200	6	B	26	18	468	2.35	30%	10%	20%	0.368	1	3400	20400	0.86	13.87
	F312	1	C	26	18	468	5.64	30%	30%	20%						
3	I200	7	C	26	19	494	5.47	30%	30%	20%	0.252	1	3400	23800	0.86	10.50
	I200	6	B	26	19	494	2.28	30%	10%	20%	0.373	1	3400	20400	0.86	13.32
4	I200	6	C	26	19	494	5.47	30%	30%	20%	0.252	1	3400	20400	0.86	9.00
	I200	7	B	26	19	494	2.28	30%	10%	20%	0.373	1	3400	23800	0.86	15.54
	F312	1	C	26	19	494	5.47	30%	30%	20%						
5	I200	5	C	26	19	494	5.47	30%	30%	20%	0.252	1	3400	17000	0.86	7.50
	I200	6	B	26	19	494	2.28	30%	10%	20%	0.373	1	3400	20400	0.86	13.32
6	I200	5	C	26	19	494	5.47	30%	30%	20%	0.252	1	3400	17000	0.86	7.50
	I200	6	B	26	19	494	2.28	30%	10%	20%	0.373	1	3400	20400	0.86	13.32
	F312	1	C	26	19	494	5.47	30%	30%	20%						
7	I200	6	C	26	19	494	5.47	30%	30%	20%	0.252	1	3400	20400	0.86	9.00
	I200	6	B	26	19	494	2.28	30%	10%	20%	0.373	1	3400	20400	0.86	13.32
8	I200	6	C	26	19	494	5.47	30%	30%	20%	0.252	1	3400	20400	0.86	9.00
	F312	5	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	38550	0.92	35.46
9	I200	7	C	26	19	494	5.47	30%	30%	20%	0.252	1	3400	23800	0.86	10.50
	F312	6	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	46260	0.92	42.55
10	I200	6	C	26	19	494	5.47	30%	30%	20%	0.252	1	3400	20400	0.86	9.00
	F312	5	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	38550	0.92	35.46
11	I200	6	C	26	19	494	5.47	30%	30%	20%	0.252	1	3400	20400	0.86	9.00
	I200	2	B	26	19	494	2.28	30%	10%	20%	0.373	1	3400	6800	0.86	4.44
	F312	3	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	23130	0.92	21.27
12	F312	1	C	26	19	494	5.47	30%	30%	20%						
	F312	3	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	23130	0.92	21.27
	I200	2	B	26	19	494	2.28	30%	10%	20%	0.373	1	3400	6800	0.86	4.44
	I200	3	C	26	19	494	5.47	30%	30%	20%	0.252	1	3400	10200	0.86	4.50
13	I200	3	C	18	19	342	6.49	30%	30%	20%	0.222	1	3400	10200	0.86	5.72
	I200	5	B	18	19	342	2.70	30%	10%	20%	0.373	1	3400	17000	0.86	16.03
13A	I200	3	C	12	8	96	12.50	30%	30%	20%	0.140	1	3400	10200	0.86	12.86
13B	I200	2	C	7	8	56	16.07	30%	30%	20%	0.140	1	3400	6800	0.86	14.70
14	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
	F312	3	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	23130	0.92	17.71

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	I200	3	C	29	19	551	5.23	30%	30%	20%	0.259	1	3400	10200	0.86	4.14
	I200	5	B	29	19	551	2.18	30%	10%	20%	0.380	1	3400	17000	0.86	10.14
15A	F312	1	C	10	5	50	18.00	30%	30%	20%						
16	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
	I200	5	B	32	19	608	2.10	30%	10%	20%	0.385	1	3400	17000	0.86	9.31
	F312	2	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	15420	0.92	11.80
17	I200	5	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	17000	0.86	6.41
	I200	6	B	32	19	608	2.10	30%	10%	20%	0.385	1	3400	20400	0.86	11.17
18	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
	I200	6	B	32	19	608	2.10	30%	10%	20%	0.385	1	3400	20400	0.86	11.17
19	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
	I200	6	B	32	19	608	2.10	30%	10%	20%	0.385	1	3400	20400	0.86	11.17
20	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
	I200	5	B	32	19	608	2.10	30%	10%	20%	0.385	1	3400	17000	0.86	9.31
	F312	2	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	15420	0.92	11.80
	F312	1	C	32	19	608	5.03	30%	30%	20%						
21	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
	F312	1	C	32	19	608	5.03	30%	30%	20%						
	F312	3	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	23130	0.92	17.71
22	I200	5	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	17000	0.86	6.41
	I200	2	B	32	19	608	2.10	30%	10%	20%	0.385	1	3400	6800	0.86	3.72
	F312	3	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	23130	0.92	17.71
	F312	2	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	15420	0.92	11.80
23	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
	F312	6	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	46260	0.92	35.41
24	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
	F312	1	C	32	19	608	5.03	30%	30%	20%						
	F312	6	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	46260	0.92	35.41
25	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
	F312	6	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	46260	0.92	35.41
26	I200	6	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	20400	0.86	7.69
	I200	5	B	32	19	608	2.10	30%	10%	20%	0.385	1	3400	17000	0.86	9.31
27	I200	2	C	12	6	72	15.00	30%	30%	20%	0.140	1	3400	6800	0.86	11.43
28	I200	2	C	12	6	72	15.00	30%	30%	20%	0.140	1	3400	6800	0.86	11.43
29	I200	2	C	12	6	72	15.00	30%	30%	20%	0.140	1	3400	6800	0.86	11.43
30	I200	2	C	12	6	72	15.00	30%	30%	20%	0.140	1	3400	6800	0.86	11.43
31	I200	2	C	12	6	72	15.00	30%	30%	20%	0.140	1	3400	6800	0.86	11.43
32	I200	2	C	8	6	48	17.50	30%	30%	20%	0.140	1	3400	6800	0.86	17.15

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
RN	I200	4	R	62	8	496	3.53	30%	30%	20%	0.333	1	3400	13600	0.86	7.89
	I200	2	R	62	8	496	3.53	30%	30%	20%	0.333	1	3400	6800	0.86	3.95
RW	I200	12	R	248	8	1984	3.23	30%	30%	20%	0.349	1	3400	40800	0.86	6.20
33	F312	2	C	70	46	3220	2.16	30%	30%	20%						
	I200	24	C	70	46	3220	2.16	30%	30%	20%	0.416	1	3400	81600	0.86	9.11
34	F312	4	C	128	36	4608	2.14	30%	30%	20%						
	F312	2	C	128	36	4608	2.14	30%	30%	20%						
	I200	21	C	128	36	4608	2.14	30%	30%	20%	0.417	1	3400	71400	0.86	5.59
	I200	6	C	128	36	4608	2.14	30%	30%	20%	0.417	1	3400	20400	0.86	1.60
35	I200	7	C	74	20	1480	3.81	30%	30%	20%	0.318	1	3400	23800	0.86	4.42
36	I200	17	C	74	42	3108	2.24	30%	30%	20%	0.410	1	3400	57800	0.86	6.59
37	HP10	2	L	30	16	480	2.40	30%	30%	20%	0.553	1	8550	17100	0.94	18.54
	MV10	2	L	30	16	480	2.40	30%	30%	20%	0.356	1	2800	5600	0.81	3.34
38	I200	7	C	30	16	480	5.75	30%	30%	20%	0.244	1	3400	23800	0.86	10.46
39	I200	2	C	12	6	72	15.00	30%	30%	20%	0.140	1	3400	6800	0.86	11.43
40	I200	2	C	24	20	480	5.50	30%	30%	20%	0.251	1	3400	6800	0.86	3.07
41	I200	12	C	62	32	1984	2.84	30%	30%	20%	0.371	1	3400	40800	0.86	6.60
42	I200	5	C	40	26	1040	3.81	30%	30%	20%	0.318	1	3400	17000	0.86	4.49
	I200	2	C	40	26	1040	3.81	30%	30%	20%	0.318	1	3400	6800	0.86	1.80
	I200	2	C	40	26	1040	3.81	30%	30%	20%	0.318	1	3400	6800	0.86	1.80
43	I200	5	C	40	26	1040	3.81	30%	30%	20%	0.318	1	3400	17000	0.86	4.49
	F312	2	C	40	26	1040	3.81	30%	30%	20%						
44	I200	3	C	22	12	264	7.73	30%	30%	20%	0.190	1	3400	10200	0.86	6.35
45	I200	2	C	12	12	144	10.00	30%	30%	20%	0.140	1	3400	6800	0.86	5.72
46	I200	5	C	20	12	240	8.00	30%	30%	20%	0.183	1	3400	17000	0.86	11.21
47	I200	5	C	34	10	340	7.76	30%	30%	20%	0.189	1	3400	17000	0.86	8.17
48	I200	2	C	16	12	192	8.75	30%	30%	20%	0.169	1	3400	6800	0.86	5.17
49	I200	3	C	18	12	216	8.33	30%	30%	20%	0.177	1	3400	10200	0.86	7.23
50	I200	5	C	44	10	440	7.36	30%	30%	20%	0.199	1	3400	17000	0.86	6.65
51	I200	3	C	16	14	224	8.04	30%	30%	20%	0.182	1	3400	10200	0.86	7.16
52	I200	3	C	16	14	224	8.04	30%	30%	20%	0.182	1	3400	10200	0.86	7.16
53	I200	3	C	16	13	208	8.37	30%	30%	20%	0.176	1	3400	10200	0.86	7.46
54	I200	3	C	16	13	208	8.37	30%	30%	20%	0.176	1	3400	10200	0.86	7.46
55	I200	5	C	24	10	240	8.50	30%	30%	20%	0.174	1	3400	17000	0.86	10.65
56	I200	7	C	72	10	720	6.83	30%	30%	20%	0.213	1	3400	23800	0.86	6.09
RE	I200	3	R	39	8	312	3.77	30%	30%	20%	0.320	1	3400	10200	0.86	9.04

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	2	C	20	18	360	6.33	30%	30%	20%	0.191	1	4000	8000	0.90	3.83
	F208	3	B	20	18	360	2.64	30%	10%	20%	0.542	2	2650	15900	0.92	22.06
1A	MH70	2	C	13	6	78	14.62	30%	30%	20%	0.115	1	4000	8000	0.90	10.64
1B	MH70	1	C	5	6	30	22.00	30%	30%	20%	0.115	1	4000	4000	0.90	13.83
2	MH70	4	C	26	18	468	5.64	30%	30%	20%	0.209	1	4000	16000	0.90	6.45
	F208	4	B	26	18	468	2.35	30%	10%	20%	0.559	2	2650	21200	0.92	23.34
	F208	1	C	26	18	468	5.64	30%	30%	20%						
3	MH70	5	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	20000	0.90	7.82
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
4	MH70	4	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.25
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
	F208	1	C	26	19	494	5.47	30%	30%	20%						
5	MH70	3	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	12000	0.90	4.69
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
6	MH70	3	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	12000	0.90	4.69
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
	F208	1	C	26	19	494	5.47	30%	30%	20%						
7	MH70	4	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.25
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
8	MH70	4	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.25
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
9	MH70	5	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	20000	0.90	7.82
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
10	MH70	4	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.25
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
11	MH70	4	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.25
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
12	F208	1	C	26	19	494	5.47	30%	30%	20%						
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
	MH70	2	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	8000	0.90	3.13
13	MH70	2	C	18	19	342	6.49	30%	30%	20%	0.187	1	4000	8000	0.90	3.95
	F208	3	B	18	19	342	2.70	30%	10%	20%	0.538	2	2650	15900	0.92	23.05
13A	MH70	2	C	12	8	96	12.50	30%	30%	20%	0.115	1	4000	8000	0.90	8.65
13B	MH70	1	C	7	8	56	16.07	30%	30%	20%	0.115	1	4000	4000	0.90	7.41
14	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	MH70	2	C	29	19	551	5.23	30%	30%	20%	0.221	1	4000	8000	0.90	2.89
	F208	4	B	29	19	551	2.18	30%	10%	20%	0.569	2	2650	21200	0.92	20.18
15A	F208	1	C	10	5	50	18.00	30%	30%	20%						
16	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
17	MH70	3	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	12000	0.90	4.02
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
18	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
19	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
20	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
	F208	1	C	32	19	608	5.03	30%	30%	20%						
21	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F208	1	C	32	19	608	5.03	30%	30%	20%						
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
22	MH70	3	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	12000	0.90	4.02
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
	F208	2	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	10600	0.92	9.22
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
23	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
24	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F208	1	C	32	19	608	5.03	30%	30%	20%						
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
25	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
26	MH70	4	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	16000	0.90	5.37
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83
27	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
28	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
29	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
30	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
31	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
32	MH70	1	C	8	6	48	17.50	30%	30%	20%	0.115	1	4000	4000	0.90	8.65

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
RN	MH70	4	R	62	8	496	3.53	30%	30%	20%	0.290	1	4000	16000	0.90	8.44
	MH70	2	R	62	8	496	3.53	30%	30%	20%	0.290	1	4000	8000	0.90	4.22
RW	MH70	12	R	248	8	1984	3.23	30%	30%	20%	0.305	1	4000	48000	0.90	6.66
33	F208	2	C	70	46	3220	2.16	30%	30%	20%						
	MH70	17	C	70	46	3220	2.16	30%	30%	20%	0.372	1	4000	68000	0.90	7.09
34	F208	4	C	128	36	4608	2.14	30%	30%	20%						
	F208	2	C	128	36	4608	2.14	30%	30%	20%						
	MH70	15	C	128	36	4608	2.14	30%	30%	20%	0.373	1	4000	60000	0.90	4.38
	MH70	4	C	128	36	4608	2.14	30%	30%	20%	0.373	1	4000	16000	0.90	1.17
35	MH70	5	C	74	20	1480	3.81	30%	30%	20%	0.276	1	4000	20000	0.90	3.36
36	MH70	12	C	74	42	3108	2.24	30%	30%	20%	0.366	1	4000	48000	0.90	5.10
37	HP10	2	L	30	16	480	2.40	30%	30%	20%	0.553	1	8550	17100	0.94	18.54
	MH70	2	L	30	16	480	2.40	30%	30%	20%	0.356	1	4000	8000	0.90	5.35
38	MH70	5	C	30	16	480	5.75	30%	30%	20%	0.206	1	4000	20000	0.90	7.74
39	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
40	MH70	1	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	4000	0.90	1.60
41	MH70	8	C	62	32	1984	2.84	30%	30%	20%	0.327	1	4000	32000	0.90	4.76
42	MH70	3	C	40	26	1040	3.81	30%	30%	20%	0.276	1	4000	12000	0.90	2.87
	MH70	1	C	40	26	1040	3.81	30%	30%	20%	0.276	1	4000	4000	0.90	0.96
	MH70	1	C	40	26	1040	3.81	30%	30%	20%	0.276	1	4000	4000	0.90	0.96
43	MH70	3	C	40	26	1040	3.81	30%	30%	20%	0.276	1	4000	12000	0.90	2.87
	F208	2	C	40	26	1040	3.81	30%	30%	20%						
44	MH70	2	C	22	12	264	7.73	30%	30%	20%	0.158	1	4000	8000	0.90	4.32
45	MH70	1	C	12	12	144	10.00	30%	30%	20%	0.115	1	4000	4000	0.90	2.88
46	MH70	3	C	20	12	240	8.00	30%	30%	20%	0.152	1	4000	12000	0.90	6.86
47	MH70	3	C	34	10	340	7.76	30%	30%	20%	0.157	1	4000	12000	0.90	5.00
48	MH70	1	C	16	12	192	8.75	30%	30%	20%	0.140	1	4000	4000	0.90	2.63
49	MH70	2	C	18	12	216	8.33	30%	30%	20%	0.147	1	4000	8000	0.90	4.91
50	MH70	3	C	44	10	440	7.36	30%	30%	20%	0.166	1	4000	12000	0.90	4.08
51	MH70	2	C	16	14	224	8.04	30%	30%	20%	0.151	1	4000	8000	0.90	4.86
52	MH70	2	C	16	14	224	8.04	30%	30%	20%	0.151	1	4000	8000	0.90	4.86
53	MH70	2	C	16	13	208	8.37	30%	30%	20%	0.146	1	4000	8000	0.90	5.07
54	MH70	2	C	16	13	208	8.37	30%	30%	20%	0.146	1	4000	8000	0.90	5.07
55	MH70	3	C	24	10	240	8.50	30%	30%	20%	0.144	1	4000	12000	0.90	6.50
56	MH70	5	C	72	10	720	6.83	30%	30%	20%	0.178	1	4000	20000	0.90	4.46
RE	MH70	3	R	39	8	312	3.77	30%	30%	20%	0.278	1	4000	12000	0.90	9.65

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	2	C	20	18	360	6.33	30%	30%	20%	0.299	1	5450	10900	0.94	8.52
	F208	3	B	20	18	360	2.64	30%	10%	20%	0.542	2	2650	15900	0.92	22.06
1A	HP70	2	C	13	6	78	14.62	30%	30%	20%	0.178	1	5450	10900	0.94	23.40
1B	HP70	1	C	5	6	30	22.00	30%	30%	20%	0.178	1	5450	5450	0.94	30.43
2	HP70	4	C	26	18	468	5.64	30%	30%	20%	0.328	1	5450	21800	0.94	14.38
	F208	4	B	26	18	468	2.35	30%	10%	20%	0.559	2	2650	21200	0.92	23.34
	F208	1	C	26	18	468	5.64	30%	30%	20%						
3	HP70	5	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	27250	0.94	17.44
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
4	HP70	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	13.95
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
	F208	1	C	26	19	494	5.47	30%	30%	20%						
5	HP70	3	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	16350	0.94	10.46
	F208	4	B	26	19	494	2.28	30%	10%	20%		2	2650			
6	HP70	3	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	16350	0.94	10.46
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
	F208	1	C	26	19	494	5.47	30%	30%	20%						
7	HP70	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	13.95
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
8	HP70	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	13.95
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
9	HP70	5	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	27250	0.94	17.44
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
10	HP70	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	13.95
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
11	HP70	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	13.95
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
12	F208	1	C	26	19	494	5.47	30%	30%	20%						
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
	HP70	2	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	10900	0.94	6.98
13	HP70	2	C	18	19	342	6.49	30%	30%	20%	0.292	1	5450	10900	0.94	8.76
	F208	3	B	18	19	342	2.70	30%	10%	20%	0.538	2	2650	15900	0.92	23.05
13A	HP70	2	C	12	8	96	12.50	30%	30%	20%	0.178	1	5450	10900	0.94	19.02
13B	HP70	1	C	7	8	56	16.07	30%	30%	20%	0.178	1	5450	5450	0.94	16.30
14	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	HP70	2	C	29	19	551	5.23	30%	30%	20%	0.347	1	5450	10900	0.94	6.46
	F208	4	B	29	19	551	2.18	30%	10%	20%	0.569	2	2650	21200	0.92	20.18
15A	F208	1	C	10	5	50	18.00	30%	30%	20%						
16	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
17	HP70	3	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	16350	0.94	9.01
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
18	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
19	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
20	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
	F208	1	C	32	19	608	5.03	30%	30%	20%						
21	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F208	1	C	32	19	608	5.03	30%	30%	20%						
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
22	HP70	3	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	16350	0.94	9.01
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
	F208	2	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	10600	0.92	9.22
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
23	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
24	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F208	1	C	32	19	608	5.03	30%	30%	20%						
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
25	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
26	HP70	4	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	21800	0.94	12.01
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83
27	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
28	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
29	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
30	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
31	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
32	HP70	1	C	8	6	48	17.50	30%	30%	20%	0.178	1	5450	5450	0.94	19.02

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
RN	HP50	4	R	62	8	496	3.53	30%	30%	20%	0.456	1	3600	14400	0.94	12.46
	HP50	2	R	62	8	496	3.53	30%	30%	20%	0.456	1	3600	7200	0.94	6.23
RW	HP50	12	R	248	8	1984	3.23	30%	30%	20%	0.479	1	3600	43200	0.94	9.81
33	F208	2	C	70	46	3220	2.16	30%	30%	20%						
	HP70	17	C	70	46	3220	2.16	30%	30%	20%	0.576	1	5450	92650	0.94	15.59
34	F208	4	C	128	36	4608	2.14	30%	30%	20%						
	F208	2	C	128	36	4608	2.14	30%	30%	20%						
	HP70	15	C	128	36	4608	2.14	30%	30%	20%	0.578	1	5450	81750	0.94	9.65
	HP70	4	C	128	36	4608	2.14	30%	30%	20%	0.578	1	5450	21800	0.94	2.57
35	HP70	5	C	74	20	1480	3.81	30%	30%	20%	0.434	1	5450	27250	0.94	7.52
36	HP70	12	C	74	42	3108	2.24	30%	30%	20%	0.568	1	5450	65400	0.94	11.25
37	HP10	2	L	30	16	480	2.40	30%	30%	20%	0.553	1	8550	17100	0.94	18.54
	HP70	2	L	30	16	480	2.40	30%	30%	20%	0.553	1	5450	10900	0.94	11.82
38	HP70	5	C	30	16	480	5.75	30%	30%	20%	0.323	1	5450	27250	0.94	17.25
39	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
40	HP70	1	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	5450	0.94	3.58
41	HP70	8	C	62	32	1984	2.84	30%	30%	20%	0.512	1	5450	43600	0.94	10.59
42	HP70	3	C	40	26	1040	3.81	30%	30%	20%	0.434	1	5450	16350	0.94	6.42
	HP70	1	C	40	26	1040	3.81	30%	30%	20%	0.434	1	5450	5450	0.94	2.14
	HP70	1	C	40	26	1040	3.81	30%	30%	20%	0.434	1	5450	5450	0.94	2.14
43	HP70	3	C	40	26	1040	3.81	30%	30%	20%	0.434	1	5450	16350	0.94	6.42
	F208	2	C	40	26	1040	3.81	30%	30%	20%						
44	HP70	2	C	22	12	264	7.73	30%	30%	20%	0.246	1	5450	10900	0.94	9.56
45	HP70	1	C	12	12	144	10.00	30%	30%	20%	0.178	1	5450	5450	0.94	6.34
46	HP70	3	C	20	12	240	8.00	30%	30%	20%	0.237	1	5450	16350	0.94	15.19
47	HP70	3	C	34	10	340	7.76	30%	30%	20%	0.245	1	5450	16350	0.94	11.09
48	HP70	1	C	16	12	192	8.75	30%	30%	20%	0.217	1	5450	5450	0.94	5.80
49	HP70	2	C	18	12	216	8.33	30%	30%	20%	0.228	1	5450	10900	0.94	10.83
50	HP70	3	C	44	10	440	7.36	30%	30%	20%	0.259	1	5450	16350	0.94	9.06
51	HP70	2	C	16	14	224	8.04	30%	30%	20%	0.236	1	5450	10900	0.94	10.81
52	HP70	2	C	16	14	224	8.04	30%	30%	20%	0.236	1	5450	10900	0.94	10.81
53	HP70	2	C	16	13	208	8.37	30%	30%	20%	0.227	1	5450	10900	0.94	11.19
54	HP70	2	C	16	13	208	8.37	30%	30%	20%	0.227	1	5450	10900	0.94	11.19
55	HP70	3	C	24	10	240	8.50	30%	30%	20%	0.224	1	5450	16350	0.94	14.36
56	HP70	5	C	72	10	720	6.83	30%	30%	20%	0.279	1	5450	27250	0.94	9.94
RE	HP50	3	R	39	8	312	3.77	30%	30%	20%	0.437	1	3600	10800	0.94	14.23

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	2	C	20	18	360	6.33	30%	30%	20%	0.191	1	4000	8000	0.90	3.83
	F312	3	B	20	18	360	2.64	30%	10%	20%	0.469	3	2570	23130	0.92	27.77
1A	MH70	2	C	13	6	78	14.62	30%	30%	20%	0.115	1	4000	8000	0.90	10.64
1B	MH70	1	C	5	6	30	22.00	30%	30%	20%	0.115	1	4000	4000	0.90	13.83
2	MH70	4	C	26	18	468	5.64	30%	30%	20%	0.209	1	4000	16000	0.90	6.45
	F312	4	B	26	18	468	2.35	30%	10%	20%	0.488	3	2570	30840	0.92	29.64
	F312	1	C	26	18	468	5.64	30%	30%	20%						
3	MH70	5	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	20000	0.90	7.82
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
4	MH70	4	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.25
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
	F312	1	C	26	19	494	5.47	30%	30%	20%						
5	MH70	3	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	12000	0.90	4.69
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
6	MH70	3	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	12000	0.90	4.69
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
	F312	1	C	26	19	494	5.47	30%	30%	20%						
7	MH70	4	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.25
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
8	MH70	4	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.25
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
9	MH70	5	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	20000	0.90	7.82
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
10	MH70	4	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.25
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
11	MH70	4	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	16000	0.90	6.25
	F312	2	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	15420	0.92	14.18
	F312	2	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	15420	0.92	14.18
12	F312	1	C	26	19	494	5.47	30%	30%	20%						
	F312	2	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	15420	0.92	14.18
	F312	2	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	15420	0.92	14.18
	MH70	2	C	26	19	494	5.47	30%	30%	20%	0.214	1	4000	8000	0.90	3.13
13	MH70	2	C	18	19	342	6.49	30%	30%	20%	0.187	1	4000	8000	0.90	3.95
	F312	3	B	18	19	342	2.70	30%	10%	20%	0.373	3	2570	23130	0.92	23.25
13A	MH70	2	C	12	8	96	12.50	30%	30%	20%	0.115	1	4000	8000	0.90	8.65
13B	MH70	1	C	7	8	56	16.07	30%	30%	20%	0.115	1	4000	4000	0.90	7.41
14	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F312	3	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	23130	0.92	17.71

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	MH70	2	C	29	19	551	5.23	30%	30%	20%	0.221	1	4000	8000	0.90	2.89
	F312	4	B	29	19	551	2.18	30%	10%	20%	0.499	3	2570	30840	0.92	25.74
15A	F312	1	C	10	5	50	18.00	30%	30%	20%						
16	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F312	3	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	23130	0.92	17.71
	F312	1	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	7710	0.92	5.90
17	MH70	3	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	12000	0.90	4.02
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
18	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
19	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
20	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F312	3	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	23130	0.92	17.71
	F312	1	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	7710	0.92	5.90
	F312	1	C	32	19	608	5.03	30%	30%	20%						
21	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F312	1	C	32	19	608	5.03	30%	30%	20%						
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
22	MH70	3	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	12000	0.90	4.02
	F312	1	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	7710	0.92	5.90
	F312	2	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	15420	0.92	11.80
	F312	1	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	7710	0.92	5.90
23	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
24	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F312	1	C	32	19	608	5.03	30%	30%	20%						
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
25	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
26	MH70	4	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	16000	0.90	5.37
	F312	3	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	23130	0.92	17.71
27	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
28	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
29	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
30	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
31	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
32	MH70	1	C	8	6	48	17.50	30%	30%	20%	0.115	1	4000	4000	0.90	8.65

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
RN	MH70	4	R	62	8	496	3.53	30%	30%	20%	0.290	1	4000	16000	0.90	8.44
	MH70	2	R	62	8	496	3.53	30%	30%	20%	0.290	1	4000	8000	0.90	4.22
RW	MH70	12	R	248	8	1984	3.23	30%	30%	20%	0.305	1	4000	48000	0.90	6.66
33	F312	2	C	70	46	3220	2.16	30%	30%	20%						
	MH70	17	C	70	46	3220	2.16	30%	30%	20%	0.372	1	4000	68000	0.90	7.09
34	F312	4	C	128	36	4608	2.14	30%	30%	20%						
	F312	2	C	128	36	4608	2.14	30%	30%	20%						
	MH70	15	C	128	36	4608	2.14	30%	30%	20%	0.373	1	4000	60000	0.90	4.38
	MH70	4	C	128	36	4608	2.14	30%	30%	20%	0.373	1	4000	16000	0.90	1.17
35	MH70	5	C	74	20	1480	3.81	30%	30%	20%	0.276	1	4000	20000	0.90	3.36
36	MH70	12	C	74	42	3108	2.24	30%	30%	20%	0.366	1	4000	48000	0.90	5.10
37	HP10	2	L	30	16	480	2.40	30%	30%	20%	0.553	1	8550	17100	0.94	18.54
	MH70	2	L	30	16	480	2.40	30%	30%	20%	0.356	1	4000	8000	0.90	5.35
38	MH70	5	C	30	16	480	5.75	30%	30%	20%	0.206	1	4000	20000	0.90	7.74
39	MH70	1	C	12	6	72	15.00	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
40	MH70	1	C	24	20	480	5.50	30%	30%	20%	0.213	1	4000	4000	0.90	1.60
41	MH70	8	C	62	32	1984	2.84	30%	30%	20%	0.327	1	4000	32000	0.90	4.76
42	MH70	3	C	40	26	1040	3.81	30%	30%	20%	0.276	1	4000	12000	0.90	2.87
	MH70	1	C	40	26	1040	3.81	30%	30%	20%	0.276	1	4000	4000	0.90	0.96
	MH70	1	C	40	26	1040	3.81	30%	30%	20%	0.276	1	4000	4000	0.90	0.96
43	MH70	3	C	40	26	1040	3.81	30%	30%	20%	0.276	1	4000	12000	0.90	2.87
	F312	2	C	40	26	1040	3.81	30%	30%	20%						
44	MH70	2	C	22	12	264	7.73	30%	30%	20%	0.158	1	4000	8000	0.90	4.32
45	MH70	1	C	12	12	144	10.00	30%	30%	20%	0.115	1	4000	4000	0.90	2.88
46	MH70	3	C	20	12	240	8.00	30%	30%	20%	0.152	1	4000	12000	0.90	6.86
47	MH70	3	C	34	10	340	7.76	30%	30%	20%	0.157	1	4000	12000	0.90	5.00
48	MH70	1	C	16	12	192	8.75	30%	30%	20%	0.140	1	4000	4000	0.90	2.63
49	MH70	2	C	18	12	216	8.33	30%	30%	20%	0.147	1	4000	8000	0.90	4.91
50	MH70	3	C	44	10	440	7.36	30%	30%	20%	0.166	1	4000	12000	0.90	4.08
51	MH70	2	C	16	14	224	8.04	30%	30%	20%	0.151	1	4000	8000	0.90	4.86
52	MH70	2	C	16	14	224	8.04	30%	30%	20%	0.151	1	4000	8000	0.90	4.86
53	MH70	2	C	16	13	208	8.37	30%	30%	20%	0.146	1	4000	8000	0.90	5.07
54	MH70	2	C	16	13	208	8.37	30%	30%	20%	0.146	1	4000	8000	0.90	5.07
55	MH70	3	C	24	10	240	8.50	30%	30%	20%	0.144	1	4000	12000	0.90	6.50
56	MH70	5	C	72	10	720	6.83	30%	30%	20%	0.178	1	4000	20000	0.90	4.46
RE	MH70	3	R	39	8	312	3.77	30%	30%	20%	0.278	1	4000	12000	0.90	9.65

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	2	C	20	18	360	6.33	30%	30%	20%	0.299	1	5450	10900	0.94	8.52
	F312	3	B	20	18	360	2.64	30%	10%	20%	0.469	3	2570	23130	0.92	27.77
1A	HP70	2	C	13	6	78	14.62	30%	30%	20%	0.178	1	5450	10900	0.94	23.40
1B	HP70	1	C	5	6	30	22.00	30%	30%	20%	0.178	1	5450	5450	0.94	30.43
2	HP70	4	C	26	18	468	5.64	30%	30%	20%	0.328	1	5450	21800	0.94	14.38
	F312	4	B	26	18	468	2.35	30%	10%	20%	0.488	3	2570	30840	0.92	29.64
	F312	1	C	26	18	468	5.64	30%	30%	20%						
3	HP70	5	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	27250	0.94	17.44
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
4	HP70	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	13.95
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
	F312	1	C	26	19	494	5.47	30%	30%	20%						
5	HP70	3	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	16350	0.94	10.46
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
6	HP70	3	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	16350	0.94	10.46
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
	F312	1	C	26	19	494	5.47	30%	30%	20%						
7	HP70	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	13.95
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
8	HP70	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	13.95
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
9	HP70	5	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	27250	0.94	17.44
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
10	HP70	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	13.95
	F312	4	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	30840	0.92	28.36
11	HP70	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	21800	0.94	13.95
	F312	2	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	15420	0.92	14.18
	F312	2	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	15420	0.92	14.18
12	F312	1	C	26	19	494	5.47	30%	30%	20%						
	F312	2	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	15420	0.92	14.18
	F312	2	B	26	19	494	2.28	30%	10%	20%	0.493	3	2570	15420	0.92	14.18
	HP70	2	C	26	19	494	5.47	30%	30%	20%	0.336	1	5450	10900	0.94	6.98
13	HP70	2	C	18	19	342	6.49	30%	30%	20%	0.292	1	5450	10900	0.94	8.76
	F312	3	B	18	19	342	2.70	30%	10%	20%	0.373	3	2570	23130	0.92	23.25
13A	HP70	2	C	12	8	96	12.50	30%	30%	20%	0.178	1	5450	10900	0.94	19.02
13B	HP70	1	C	7	8	56	16.07	30%	30%	20%	0.178	1	5450	5450	0.94	16.30
14	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F312	3	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	23130	0.92	17.71

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	HP70	2	C	29	19	551	5.23	30%	30%	20%	0.347	1	5450	10900	0.94	6.46
	F312	4	B	29	19	551	2.18	30%	10%	20%	0.499	3	2570	30840	0.92	25.74
15A	F312	1	C	10	5	50	18.00	30%	30%	20%						
16	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F312	3	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	23130	0.92	17.71
	F312	1	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	7710	0.92	5.90
17	HP70	3	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	16350	0.94	9.01
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
18	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
19	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
20	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F312	3	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	23130	0.92	17.71
	F312	1	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	7710	0.92	5.90
	F312	1	C	32	19	608	5.03	30%	30%	20%						
21	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F312	1	C	32	19	608	5.03	30%	30%	20%						
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
22	HP70	3	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	16350	0.94	9.01
	F312	1	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	7710	0.92	5.90
	F312	2	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	15420	0.92	11.80
	F312	1	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	7710	0.92	5.90
23	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
24	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F312	1	C	32	19	608	5.03	30%	30%	20%						
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
25	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F312	4	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	30840	0.92	23.61
26	HP70	4	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	21800	0.94	12.01
	F312	3	B	32	19	608	2.10	30%	10%	20%	0.505	3	2570	23130	0.92	17.71
27	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
28	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
29	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
30	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
31	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
32	HP70	1	C	8	6	48	17.50	30%	30%	20%	0.178	1	5450	5450	0.94	19.02

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
RN	HP50	4	R	62	8	496	3.53	30%	30%	20%	0.456	1	3600	14400	0.94	12.46
	HP50	2	R	62	8	496	3.53	30%	30%	20%	0.456	1	3600	7200	0.94	6.23
RW	HP50	12	R	248	8	1984	3.23	30%	30%	20%	0.479	1	3600	43200	0.94	9.81
33	F312	2	C	70	46	3220	2.16	30%	30%	20%						
	HP70	17	C	70	46	3220	2.16	30%	30%	20%	0.576	1	5450	92650	0.94	15.59
34	F312	4	C	128	36	4608	2.14	30%	30%	20%						
	F312	2	C	128	36	4608	2.14	30%	30%	20%						
	HP70	15	C	128	36	4608	2.14	30%	30%	20%	0.578	1	5450	81750	0.94	9.65
	HP70	4	C	128	36	4608	2.14	30%	30%	20%	0.578	1	5450	21800	0.94	2.57
35	HP70	5	C	74	20	1480	3.81	30%	30%	20%	0.434	1	5450	27250	0.94	7.52
36	HP70	12	C	74	42	3108	2.24	30%	30%	20%	0.568	1	5450	65400	0.94	11.25
37	HP10	2	L	30	16	480	2.40	30%	30%	20%	0.553	1	8550	17100	0.94	18.54
	HP70	2	L	30	16	480	2.40	30%	30%	20%	0.553	1	5450	10900	0.94	11.82
38	HP70	5	C	30	16	480	5.75	30%	30%	20%	0.323	1	5450	27250	0.94	17.25
39	HP70	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
40	HP70	1	C	24	20	480	5.50	30%	30%	20%	0.335	1	5450	5450	0.94	3.58
41	HP70	8	C	62	32	1984	2.84	30%	30%	20%	0.512	1	5450	43600	0.94	10.59
42	HP70	3	C	40	26	1040	3.81	30%	30%	20%	0.434	1	5450	16350	0.94	6.42
	HP70	1	C	40	26	1040	3.81	30%	30%	20%	0.434	1	5450	5450	0.94	2.14
	HP70	1	C	40	26	1040	3.81	30%	30%	20%	0.434	1	5450	5450	0.94	2.14
43	HP70	3	C	40	26	1040	3.81	30%	30%	20%	0.434	1	5450	16350	0.94	6.42
	F312	2	C	40	26	1040	3.81	30%	30%	20%						
44	HP70	2	C	22	12	264	7.73	30%	30%	20%	0.246	1	5450	10900	0.94	9.56
45	HP70	1	C	12	12	144	10.00	30%	30%	20%	0.178	1	5450	5450	0.94	6.34
46	HP70	3	C	20	12	240	8.00	30%	30%	20%	0.237	1	5450	16350	0.94	15.19
47	HP70	3	C	34	10	340	7.76	30%	30%	20%	0.245	1	5450	16350	0.94	11.09
48	HP70	1	C	16	12	192	8.75	30%	30%	20%	0.217	1	5450	5450	0.94	5.80
49	HP70	2	C	18	12	216	8.33	30%	30%	20%	0.228	1	5450	10900	0.94	10.83
50	HP70	3	C	44	10	440	7.36	30%	30%	20%	0.259	1	5450	16350	0.94	9.06
51	HP70	2	C	16	14	224	8.04	30%	30%	20%	0.236	1	5450	10900	0.94	10.81
52	HP70	2	C	16	14	224	8.04	30%	30%	20%	0.236	1	5450	10900	0.94	10.81
53	HP70	2	C	16	13	208	8.37	30%	30%	20%	0.227	1	5450	10900	0.94	11.19
54	HP70	2	C	16	13	208	8.37	30%	30%	20%	0.227	1	5450	10900	0.94	11.19
55	HP70	3	C	24	10	240	8.50	30%	30%	20%	0.224	1	5450	16350	0.94	14.36
56	HP70	5	C	72	10	720	6.83	30%	30%	20%	0.279	1	5450	27250	0.94	9.94
RE	HP50	3	R	39	8	312	3.77	30%	30%	20%	0.437	1	3600	10800	0.94	14.23

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	2	C	20	18	360	6.33	30%	30%	20%	0.299	1	3600	7200	0.94	5.63
	F208	3	B	20	18	360	2.64	30%	10%	20%	0.542	2	2650	15900	0.92	22.06
1A	HP50	2	C	13	6	78	14.62	30%	30%	20%	0.178	1	3600	7200	0.94	15.46
1B	HP50	1	C	5	6	30	22.00	30%	30%	20%	0.178	1	3600	3600	0.94	20.10
2	HP50	4	C	26	18	468	5.64	30%	30%	20%	0.328	1	3600	14400	0.94	9.50
	F208	4	B	26	18	468	2.35	30%	10%	20%	0.559	2	2650	21200	0.92	23.34
	F208	1	C	26	18	468	5.64	30%	30%	20%						
3	HP50	5	C	26	19	494	5.47	30%	30%	20%	0.336	1	3600	18000	0.94	11.52
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
4	HP50	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	3600	14400	0.94	9.22
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
	F208	1	C	26	19	494	5.47	30%	30%	20%						
5	HP50	3	C	26	19	494	5.47	30%	30%	20%	0.336	1	3600	10800	0.94	6.91
	F208	4	B	26	19	494	2.28	30%	10%	20%		2	2650			
6	HP50	3	C	26	19	494	5.47	30%	30%	20%	0.336	1	3600	10800	0.94	6.91
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
	F208	1	C	26	19	494	5.47	30%	30%	20%						
7	HP50	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	3600	14400	0.94	9.22
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
8	HP50	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	3600	14400	0.94	9.22
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
9	HP50	5	C	26	19	494	5.47	30%	30%	20%	0.336	1	3600	18000	0.94	11.52
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
10	HP50	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	3600	14400	0.94	9.22
	F208	4	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	21200	0.92	22.27
11	HP50	4	C	26	19	494	5.47	30%	30%	20%	0.336	1	3600	14400	0.94	9.22
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
12	F208	1	C	26	19	494	5.47	30%	30%	20%						
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
	F208	2	B	26	19	494	2.28	30%	10%	20%	0.563	2	2650	10600	0.92	11.13
	HP50	2	C	26	19	494	5.47	30%	30%	20%	0.336	1	3600	7200	0.94	4.61
13	HP50	2	C	18	19	342	6.49	30%	30%	20%	0.292	1	3600	7200	0.94	5.78
	F208	3	B	18	19	342	2.70	30%	10%	20%	0.538	2	2650	15900	0.92	23.05
13A	HP50	2	C	12	8	96	12.50	30%	30%	20%	0.178	1	3600	7200	0.94	12.56
13B	HP50	1	C	7	8	56	16.07	30%	30%	20%	0.178	1	3600	3600	0.94	10.77
14	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	HP50	2	C	29	19	551	5.23	30%	30%	20%	0.347	1	3600	7200	0.94	4.27
	F208	4	B	29	19	551	2.18	30%	10%	20%	0.569	2	2650	21200	0.92	20.18
15A	F208	1	C	10	5	50	18.00	30%	30%	20%						
16	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
17	HP50	3	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	10800	0.94	5.95
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
18	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
19	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
20	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
	F208	1	C	32	19	608	5.03	30%	30%	20%						
21	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
	F208	1	C	32	19	608	5.03	30%	30%	20%						
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
22	HP50	3	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	10800	0.94	5.95
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
	F208	2	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	10600	0.92	9.22
	F208	1	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	5300	0.92	4.61
23	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
24	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
	F208	1	C	32	19	608	5.03	30%	30%	20%						
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
25	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
	F208	4	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	21200	0.92	18.45
26	HP50	4	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	14400	0.94	7.93
	F208	3	B	32	19	608	2.10	30%	10%	20%	0.574	2	2650	15900	0.92	13.83
27	HP50	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	3600	3600	0.94	8.37
28	HP50	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	3600	3600	0.94	8.37
29	HP50	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	3600	3600	0.94	8.37
30	HP50	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	3600	3600	0.94	8.37
31	HP50	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	3600	3600	0.94	8.37
32	HP50	1	C	8	6	48	17.50	30%	30%	20%	0.178	1	3600	3600	0.94	12.56

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
RN	HP50	4	R	62	8	496	3.53	30%	30%	20%	0.456	1	3600	14400	0.94	12.46
	HP50	2	R	62	8	496	3.53	30%	30%	20%	0.456	1	3600	7200	0.94	6.23
RW	HP50	12	R	248	8	1984	3.23	30%	30%	20%	0.479	1	3600	43200	0.94	9.81
33	F208	2	C	70	46	3220	2.16	30%	30%	20%						
	HP50	17	C	70	46	3220	2.16	30%	30%	20%	0.576	1	3600	61200	0.94	10.30
34	F208	4	C	128	36	4608	2.14	30%	30%	20%						
	F208	2	C	128	36	4608	2.14	30%	30%	20%						
	HP50	15	C	128	36	4608	2.14	30%	30%	20%	0.578	1	3600	54000	0.94	6.37
	HP50	4	C	128	36	4608	2.14	30%	30%	20%	0.578	1	3600	14400	0.94	1.70
35	HP50	5	C	74	20	1480	3.81	30%	30%	20%	0.434	1	3600	18000	0.94	4.97
36	HP50	12	C	74	42	3108	2.24	30%	30%	20%	0.568	1	3600	43200	0.94	7.43
37	HP10	2	L	30	16	480	2.40	30%	30%	20%	0.553	1	8550	17100	0.94	18.54
	HP50	2	L	30	16	480	2.40	30%	30%	20%	0.553	1	3600	7200	0.94	7.80
38	HP50	5	C	30	16	480	5.75	30%	30%	20%	0.323	1	3600	18000	0.94	11.40
39	HP50	1	C	12	6	72	15.00	30%	30%	20%	0.178	1	3600	3600	0.94	8.37
40	HP50	1	C	24	20	480	5.50	30%	30%	20%	0.335	1	3600	3600	0.94	2.36
41	HP50	8	C	62	32	1984	2.84	30%	30%	20%	0.512	1	3600	28800	0.94	6.99
42	HP50	3	C	40	26	1040	3.81	30%	30%	20%	0.434	1	3600	10800	0.94	4.24
	HP50	1	C	40	26	1040	3.81	30%	30%	20%	0.434	1	3600	3600	0.94	1.41
	HP50	1	C	40	26	1040	3.81	30%	30%	20%	0.434	1	3600	3600	0.94	1.41
43	HP50	3	C	40	26	1040	3.81	30%	30%	20%	0.434	1	3600	10800	0.94	4.24
	F208	2	C	40	26	1040	3.81	30%	30%	20%						
44	HP50	2	C	22	12	264	7.73	30%	30%	20%	0.246	1	3600	7200	0.94	6.31
45	HP50	1	C	12	12	144	10.00	30%	30%	20%	0.178	1	3600	3600	0.94	4.19
46	HP50	3	C	20	12	240	8.00	30%	30%	20%	0.237	1	3600	10800	0.94	10.03
47	HP50	3	C	34	10	340	7.76	30%	30%	20%	0.245	1	3600	10800	0.94	7.32
48	HP50	1	C	16	12	192	8.75	30%	30%	20%	0.217	1	3600	3600	0.94	3.83
49	HP50	2	C	18	12	216	8.33	30%	30%	20%	0.228	1	3600	7200	0.94	7.15
50	HP50	3	C	44	10	440	7.36	30%	30%	20%	0.259	1	3600	10800	0.94	5.98
51	HP50	2	C	16	14	224	8.04	30%	30%	20%	0.236	1	3600	7200	0.94	7.14
52	HP50	2	C	16	14	224	8.04	30%	30%	20%	0.236	1	3600	7200	0.94	7.14
53	HP50	2	C	16	13	208	8.37	30%	30%	20%	0.227	1	3600	7200	0.94	7.39
54	HP50	2	C	16	13	208	8.37	30%	30%	20%	0.227	1	3600	7200	0.94	7.39
55	HP50	3	C	24	10	240	8.50	30%	30%	20%	0.224	1	3600	10800	0.94	9.48
56	HP50	5	C	72	10	720	6.83	30%	30%	20%	0.279	1	3600	18000	0.94	6.56
RE	HP50	3	R	39	8	312	3.77	30%	30%	20%	0.437	1	3600	10800	0.94	14.23

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
1A	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
1B	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
2	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
3	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
4	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	7	B	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
5	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
6	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
7	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
8	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
9	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76
10	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
11	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	2	B	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
12	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
	I200	2	B	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
13	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
13A	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
13B	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
14	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
Page Total		162						$4,860		$52		$879	$5,791

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	L o c	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
15	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
15A	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
16	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
17	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
18	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
19	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
20	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
21	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
22	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	2	B	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
23	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76
24	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76
25	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76
26	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
27	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
28	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
29	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
30	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
31	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
32	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
Page Total		129						$3,531		$61		$712	$4,304

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
RN	I200	4	R	2496	1	700	14.3	$142	0.0	$0	1.3	$21	$163
	I200	2	R	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
RW	I200	12	R	2496	1	700	42.8	$427	0.0	$0	4.0	$63	$489
33	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	24	C	2496	1	700	85.6	$853	0.0	$0	8.0	$126	$979
34	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	21	C	2496	1	700	74.9	$747	0.0	$0	7.0	$110	$857
	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
35	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
36	I200	17	C	2496	1	700	60.6	$604	0.0	$0	5.7	$89	$693
37	HP10	2	L	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38
	MV10	2	L	2496	1	16800	0.3	$8	0.0	$6	0.7	$17	$31
38	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
39	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
40	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
41	I200	12	C	2496	1	700	42.8	$427	0.0	$0	4.0	$63	$489
42	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
43	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
44	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
45	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
46	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
47	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
48	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
49	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
50	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
51	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
52	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
53	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
54	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
55	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
56	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
RE	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
Page Total		196						$6,537		$31		$1,051	$7,619
Building Total		487						$14,928		$145		$2,642	$17,715

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
1A	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
1B	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
3	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
4	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$244
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
6	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
7	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
8	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
9	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
10	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
11	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
12	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
13	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
13A	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
13B	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
14	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
Page Total		111						$1,808		$287		$829	$2,925	$2,866

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
15A	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
16	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
17	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
18	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
19	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
20	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
21	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	($4)
22	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
23	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
24	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
25	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
26	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
27	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
28	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
29	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
30	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
31	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
32	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Page Total		85						$1,176		$206		$617	$1,999	$2,305

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
RN	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
RW	MH70	12	R	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	($28)
33	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	MH70	17	C	2496	1	5250	8.1	$524	0.3	$61	5.7	$148	$734	$245
34	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
35	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
36	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
37	HP10	2	L	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$0
	MH70	2	L	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($55)
38	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
39	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
40	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
41	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
42	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
43	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
44	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
45	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
46	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
47	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
48	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
49	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
50	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
51	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
52	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
53	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
54	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
55	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
56	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
RE	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Page Total		142						$4,046		$492		$1,214	$5,752	$1,867
Building Total		338						$7,031		$985		$2,660	$10,676	$7,038

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
1A	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
1B	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
3	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
4	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$244
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
6	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
7	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
8	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
9	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
10	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
11	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
12	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
13	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
13A	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
13B	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
14	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
Page Total		111						$461		$294		$829	$1,584	$4,207

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
15A	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
16	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
17	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
18	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
19	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
20	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
21	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	($4)
22	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
23	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
24	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
25	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
26	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
27	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
28	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
29	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
30	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
31	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
32	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
Page Total		85						$328		$210		$617	$1,155	$3,149

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
RN	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
RW	HP50	12	R	2496	1	16800	1.8	$77	0.2	$43	4.0	$105	$225	$264
33	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	HP70	17	C	2496	1	16800	2.5	$100	0.3	$63	5.7	$148	$311	$667
34	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
35	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
36	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
37	HP10	2	L	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$0
	HP70	2	L	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	($5)
38	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
39	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
40	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
41	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
42	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
43	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
44	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
45	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
46	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
47	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
48	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
49	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
50	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
51	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
52	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
53	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
54	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
55	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
56	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
RE	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Page Total		142						$815		$505		$1,214	$2,534	$5,085
Building Total		338						$1,604		$1,009		$2,660	$5,273	$12,441

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
1A	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
1B	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
3	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
4	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$235
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
5	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
6	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
7	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
8	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
9	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
10	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
11	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$56
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
12	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$56
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
13	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
13A	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
13B	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
14	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
Page Total		111						$1,923		$297		$829	$3,050	$2,742

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
15A	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
16	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
17	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
18	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
19	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
20	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
21	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	($13)
22	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
23	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
24	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
25	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
26	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
27	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
28	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
29	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
30	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
31	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
32	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Page Total		85						$1,279		$214		$617	$2,111	$2,193

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
RN	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
RW	MH70	12	R	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	($28)
33	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	MH70	17	C	2496	1	5250	8.1	$524	0.3	$61	5.7	$148	$734	$245
34	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$0
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
35	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
36	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
37	HP10	2	L	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$0
	MH70	2	L	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($55)
38	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
39	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
40	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
41	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
42	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
43	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
44	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
45	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
46	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
47	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
48	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
49	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
50	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
51	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
52	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
53	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
54	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
55	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
56	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
RE	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Page Total		142						$4,066		$494		$1,214	$5,774	$1,845
Building Total		338						$7,269		$1,005		$2,660	$10,934	$6,780

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
1A	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
1B	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
3	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
4	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$235
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
5	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
6	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
7	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
8	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
9	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
10	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
11	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$56
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
12	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$56
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
13	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
13A	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
13B	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
14	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
Page Total		111						$576		$303		$829	$1,709	$4,082

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$153
15A	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
16	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
17	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
18	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
19	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
20	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
21	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	($13)
22	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
23	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
24	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
25	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
26	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
27	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
28	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
29	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
30	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
31	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
32	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
Page Total		85						$431		$218		$617	$1,267	$3,038

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
RN	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
RW	HP50	12	R	2496	1	16800	1.8	$77	0.2	$43	4.0	$105	$225	$264
33	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	HP70	17	C	2496	1	16800	2.5	$100	0.3	$63	5.7	$148	$311	$667
34	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$0
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
35	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
36	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
37	HP10	2	L	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$0
	HP70	2	L	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	($5)
38	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
39	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
40	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
41	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
42	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
43	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
44	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
45	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
46	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
47	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
48	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
49	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
50	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
51	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
52	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
53	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
54	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
55	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
56	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
RE	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Page Total		142						$835		$507		$1,214	$2,556	$5,064
Building Total		338						$1,842		$1,029		$2,660	$5,531	$12,183

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
1A	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
1B	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
2	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
3	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
4	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$244
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
6	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
7	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
8	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
9	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
10	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
11	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
12	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
13	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
13A	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
13B	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
14	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
Page Total		111						$492		$287		$829	$1,608	$4,183

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$162
15A	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
16	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
17	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
18	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
19	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
20	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
21	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	($4)
22	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
23	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
24	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
25	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
26	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
27	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
28	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
29	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
30	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
31	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
32	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
Page Total		85						$348		$206		$617	$1,170	$3,134

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-10
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
RN	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
RW	HP50	12	R	2496	1	16800	1.8	$77	0.2	$43	4.0	$105	$225	$264
33	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	HP50	17	C	2496	1	16800	2.5	$110	0.3	$61	5.7	$148	$319	$660
34	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	HP50	15	C	2496	1	16800	2.2	$97	0.3	$54	5.0	$131	$282	$575
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
35	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
36	HP50	12	C	2496	1	16800	1.8	$77	0.2	$43	4.0	$105	$225	$468
37	HP10	2	L	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$0
	HP50	2	L	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	($6)
38	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
39	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
40	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
41	HP50	8	C	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$339
42	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
43	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
44	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
45	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
46	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
47	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
48	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
49	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
50	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
51	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
52	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
53	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
54	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
55	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
56	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
RE	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Page Total		142						$877		$492		$1,214	$2,583	$5,036
Building Total		338						$1,716		$985		$2,660	$5,362	$12,353

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	9	8-6	C	36	180	17	200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
2	I200	4	8-6	C	36	260	24	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
3	I200	3	9-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
4	I200	4	9-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
5	I200	2	7-6	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
6	I200	2	7-6	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
7	I200	2	8-6	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	3	8-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	3	7-4	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
RN	I200	5	10-0	R				200	1.00	$128	$0	$71	I200	0	200	0.00	$0	I200	5	48	52	2,496	0	2,496	$199
RS	I200	2	8-6	R				200	0.40	$51	$0	$28	I200	0	200	0.00	$0	I200	2	48	52	998	0	998	$80
	I200	3	7-9	L				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
New Panel																	$1,500								$1,500
Building Total		42							8.40	$1,079	$0	$595		17		3.40	$13,548		59			20,966	8,486	29,453	$15,222

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	13	C	180	17	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
2	I200	6	C	260	24	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
3	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
4	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
5	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
6	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
7	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
RN	I200	5	R			200	1.00	$199	MH70	5		89	0.45	$2,754	48	52	2,496	1,111	1,385	($2,554)
RS	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
	I200	3	L			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
New Panel								$1,500												$1,500
Building Total	59						11.80	$15,222		42			3.74	$23,132			29,453	9,330	20,123	($7,910)

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	13	C	180	17	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
2	I200	6	C	260	24	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
3	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
4	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
5	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
6	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
7	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
RN	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
RS	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
	I200	3	L			200	0.60	$120	HP70	3		99	0.30	$1,851	48	52	1,498	741	756	($1,731)
New Panel								$1,500												$1,500
Building Total		59					11.80	$15,222		42			3.87	$25,816			29,453	9,662	19,791	($10,594)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	13	C	180	17	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
2	I200	6	C	260	24	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
3	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
4	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
5	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
6	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
7	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
RN	I200	5	R			200	1.00	$199	MH70	5		89	0.45	$2,754	48	52	2,496	1,111	1,385	($2,554)
RS	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
	I200	3	L			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
New Panel								$1,500												$1,500
Building Total	59						11.80	$15,222		42			3.74	$23,132			29,453	9,330	20,123	($7,910)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	13	C	180	17	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
2	I200	6	C	260	24	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
3	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
4	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
5	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
6	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
7	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
RN	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
RS	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
	I200	3	L			200	0.60	$120	HP70	3		99	0.30	$1,851	48	52	1,498	741	756	($1,731)
New Panel								$1,500												$1,500
Building Total		59					11.80	$15,222		42			3.87	$25,816			29,453	9,662	19,791	($10,594)

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VIII-94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	13	C	180	17	200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
2	I200	6	C	260	24	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
3	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
4	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
5	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
6	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
7	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
RN	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
RS	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
	I200	3	L			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
New Panel								$1,500												$1,500
Building Total		59					11.80	$15,222		42			2.44	$25,339			29,453	6,080	23,373	($10,117)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	13	C	40	32	1280	3.38	30%	30%	20%	0.341	1	3400	44200 *	0.86	10.18
2	I200	6	C	32	16	512	5.63	30%	30%	20%	0.247	1	3400	20400	0.86	8.51
3	I200	5	C	32	11	352	7.33	30%	30%	20%	0.200	1	3400	17000	0.86	8.35
4	I200	6	C	32	11	352	7.33	30%	30%	20%	0.200	1	3400	20400	0.86	10.02
5	I200	3	C	11	9	99	12.12	30%	30%	20%	0.140	1	3400	10200	0.86	12.47
6	I200	3	C	20	10	200	9.00	30%	30%	20%	0.164	1	3400	10200	0.86	7.23
7	I200	3	C	46	17	782	4.83	30%	30%	20%	0.273	1	3400	10200	0.86	3.08
	I200	5	C	46	17	782	4.83	30%	30%	20%	0.273	1	3400	17000	0.86	5.13
	I200	5	C	46	17	782	4.83	30%	30%	20%	0.273	1	3400	17000	0.86	5.13
RN	I200	5	R	88	8	704	3.41	30%	30%	20%	0.339	1	3400	17000	0.86	7.08
RS	I200	2	R	55	8	440	3.58	30%	30%	20%	0.330	1	3400	6800	0.86	4.41
	I200	3	L	55	8	440	3.58	30%	30%	20%	0.330	1	3400	10200	0.86	6.61

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	9	C	40	32	1280	3.38	30%	30%	20%	0.298	1	4000	36000	0.90	7.56
2	MH70	4	C	32	16	512	5.63	30%	30%	20%	0.209	1	4000	16000	0.90	5.89
3	MH70	3	C	32	11	352	7.33	30%	30%	20%	0.167	1	4000	12000	0.90	5.14
4	MH70	4	C	32	11	352	7.33	30%	30%	20%	0.167	1	4000	16000	0.90	6.85
5	MH70	2	C	11	9	99	12.12	30%	30%	20%	0.115	1	4000	8000	0.90	8.38
6	MH70	2	C	20	10	200	9.00	30%	30%	20%	0.136	1	4000	8000	0.90	4.91
7	MH70	2	C	46	17	782	4.83	30%	30%	20%	0.234	1	4000	8000	0.90	2.16
	MH70	3	C	46	17	782	4.83	30%	30%	20%	0.234	1	4000	12000	0.90	3.24
	MH70	3	C	46	17	782	4.83	30%	30%	20%	0.234	1	4000	12000	0.90	3.24
RN	MH70	5	R	88	8	704	3.41	30%	30%	20%	0.296	1	4000	20000	0.90	7.59
RS	MH70	2	R	55	8	440	3.58	30%	30%	20%	0.287	1	4000	8000	0.90	4.71
	MH70	3	L	55	8	440	3.58	30%	30%	20%	0.287	1	4000	12000	0.90	7.06

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	9	C	40	32	1280	3.38	30%	30%	20%	0.467	1	5450	49050	0.94	16.84
2	HP70	4	C	32	16	512	5.63	30%	30%	20%	0.329	1	5450	21800	0.94	13.18
3	HP70	3	C	32	11	352	7.33	30%	30%	20%	0.260	1	5450	16350	0.94	11.36
4	HP70	4	C	32	11	352	7.33	30%	30%	20%	0.260	1	5450	21800	0.94	15.15
5	HP70	2	C	11	9	99	12.12	30%	30%	20%	0.178	1	5450	10900	0.94	18.44
6	HP70	2	C	20	10	200	9.00	30%	30%	20%	0.210	1	5450	10900	0.94	10.77
7	HP70	2	C	46	17	782	4.83	30%	30%	20%	0.368	1	5450	10900	0.94	4.83
	HP70	3	C	46	17	782	4.83	30%	30%	20%	0.368	1	5450	16350	0.94	7.24
	HP70	3	C	46	17	782	4.83	30%	30%	20%	0.368	1	5450	16350	0.94	7.24
RN	HP50	5	R	88	8	704	3.41	30%	30%	20%	0.465	1	3600	18000	0.94	11.19
RS	HP50	2	R	55	8	440	3.58	30%	30%	20%	0.452	1	3600	7200	0.94	6.96
	HP70	3	L	55	8	440	3.58	30%	30%	20%	0.452	1	5450	16350	0.94	15.80

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	9	C	40	32	1280	3.38	30%	30%	20%	0.298	1	4000	36000	0.90	7.56
2	MH70	4	C	32	16	512	5.63	30%	30%	20%	0.209	1	4000	16000	0.90	5.89
3	MH70	3	C	32	11	352	7.33	30%	30%	20%	0.167	1	4000	12000	0.90	5.14
4	MH70	4	C	32	11	352	7.33	30%	30%	20%	0.167	1	4000	16000	0.90	6.85
5	MH70	2	C	11	9	99	12.12	30%	30%	20%	0.115	1	4000	8000	0.90	8.38
6	MH70	2	C	20	10	200	9.00	30%	30%	20%	0.136	1	4000	8000	0.90	4.91
7	MH70	2	C	46	17	782	4.83	30%	30%	20%	0.234	1	4000	8000	0.90	2.16
	MH70	3	C	46	17	782	4.83	30%	30%	20%	0.234	1	4000	12000	0.90	3.24
	MH70	3	C	46	17	782	4.83	30%	30%	20%	0.234	1	4000	12000	0.90	3.24
RN	MH70	5	R	88	8	704	3.41	30%	30%	20%	0.296	1	4000	20000	0.90	7.59
RS	MH70	2	R	55	8	440	3.58	30%	30%	20%	0.287	1	4000	8000	0.90	4.71
	MH70	3	L	55	8	440	3.58	30%	30%	20%	0.287	1	4000	12000	0.90	7.06

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	9	C	40	32	1280	3.38	30%	30%	20%	0.467	1	5450	49050	0.94	16.84
2	HP70	4	C	32	16	512	5.63	30%	30%	20%	0.329	1	5450	21800	0.94	13.18
3	HP70	3	C	32	11	352	7.33	30%	30%	20%	0.260	1	5450	16350	0.94	11.36
4	HP70	4	C	32	11	352	7.33	30%	30%	20%	0.260	1	5450	21800	0.94	15.15
5	HP70	2	C	11	9	99	12.12	30%	30%	20%	0.178	1	5450	10900	0.94	18.44
6	HP70	2	C	20	10	200	9.00	30%	30%	20%	0.210	1	5450	10900	0.94	10.77
7	HP70	2	C	46	17	782	4.83	30%	30%	20%	0.368	1	5450	10900	0.94	4.83
	HP70	3	C	46	17	782	4.83	30%	30%	20%	0.368	1	5450	16350	0.94	7.24
	HP70	3	C	46	17	782	4.83	30%	30%	20%	0.368	1	5450	16350	0.94	7.24
RN	HP50	5	R	88	8	704	3.41	30%	30%	20%	0.465	1	3600	18000	0.94	11.19
RS	HP50	2	R	55	8	440	3.58	30%	30%	20%	0.452	1	3600	7200	0.94	6.96
	HP70	3	L	55	8	440	3.58	30%	30%	20%	0.452	1	5450	16350	0.94	15.80

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	9	C	40	32	1280	3.38	30%	30%	20%	0.467	1	3600	32400	0.94	11.12
2	HP50	4	C	32	16	512	5.63	30%	30%	20%	0.329	1	3600	14400	0.94	8.71
3	HP50	3	C	32	11	352	7.33	30%	30%	20%	0.260	1	3600	10800	0.94	7.51
4	HP50	4	C	32	11	352	7.33	30%	30%	20%	0.260	1	3600	14400	0.94	10.01
5	HP50	2	C	11	9	99	12.12	30%	30%	20%	0.178	1	3600	7200	0.94	12.18
6	HP50	2	C	20	10	200	9.00	30%	30%	20%	0.210	1	3600	7200	0.94	7.11
7	HP50	2	C	46	17	782	4.83	30%	30%	20%	0.368	1	3600	7200	0.94	3.19
	HP50	3	C	46	17	782	4.83	30%	30%	20%	0.368	1	3600	10800	0.94	4.78
	HP50	3	C	46	17	782	4.83	30%	30%	20%	0.368	1	3600	10800	0.94	4.78
RN	HP50	5	R	88	8	704	3.41	30%	30%	20%	0.465	1	3600	18000	0.94	11.19
RS	HP50	2	R	55	8	440	3.58	30%	30%	20%	0.452	1	3600	7200	0.94	6.96
	HP50	3	L	55	8	440	3.58	30%	30%	20%	0.452	1	3600	10800	0.94	10.44

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
2	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
3	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
4	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
5	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
6	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
7	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
RN	I200	5	R	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
RS	I200	2	R	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	I200	3	L	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
Building Total		59						$2,097		$0		$309	$2,407

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
2	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
3	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
4	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
5	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
6	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
7	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
RN	MH70	5	R	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	($12)
RS	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
	MH70	3	L	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Building Total		42						$1,295		$151		$366	$1,812	$594

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
2	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
3	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
4	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
5	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
6	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
7	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
RN	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
RS	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
	HP70	3	L	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$67
Building Total		42						$251		$155		$366	$773	$1,634

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
2	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
3	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
4	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
5	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
6	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
7	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
RN	MH70	5	R	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	($12)
RS	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
	MH70	3	L	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Building Total		42						$1,295		$151		$366	$1,812	$594

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
2	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
3	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
4	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
5	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
6	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
7	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
RN	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
RS	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
	HP70	3	L	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$67
Building Total		42						$251		$155		$366	$773	$1,634

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-16
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
2	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
3	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
4	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
5	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
6	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
7	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
RN	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
RS	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
	HP50	3	L	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Building Total		42						$271		$151		$366	$789	$1,618

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
2	I200	6	9-0	C				200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
3	I200	6	9-0	C				200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
4	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
5	I200	2	8-6	C	36	150	14	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
6	I200	5	10-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	I200	10	9-0	C				200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
7	I200	4	13-0	C	36	80	7	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	7	9-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
7A	I200	2	11-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
8	I200	20	9-6	C				200	4.00	$514	$0	$283	I200	8	200	1.60	$5,670	I200	28	48	52	9,984	3,994	13,978	$6,467
9	I200	15	9-6	C				200	3.00	$385	$0	$213	I200	6	200	1.20	$4,252	I200	21	48	52	7,488	2,995	10,483	$4,850
10	I200	12	9-6	C				200	2.40	$308	$0	$170	I200	5	200	1.00	$3,544	I200	17	48	52	5,990	2,496	8,486	$4,022
11	I200	12	9-0	C				200	2.40	$308	$0	$170	I200	5	200	1.00	$3,544	I200	17	48	52	5,990	2,496	8,486	$4,022
11A	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
12	I200	4	7-6	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	1	7-6	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
13	I200	6	9-0	C				200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
14	I200	7	9-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
15	I200	4	8-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
16	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
17	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
18	I200	5	8-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
New Panel																	$1,500								$1,500
Building Total		136							27.13	$3,512	$5	$1,927		61		12.20	$44,731					67,721	30,451	98,173	$50,175

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	206	792	$198
2	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,236	3,257	($939)
3	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,236	3,257	($939)
4	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	412	1,086	($313)
5	I200	3	C	150	14	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	412	1,086	($313)
6	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,030	2,465	($1,137)
	I200	14	C			200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,059	4,929	($2,274)
7	I200	6	C	80	7	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	824	2,171	($626)
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,442	3,550	($1,450)
7A	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	412	1,086	($313)
8	I200	28	C			200	5.60	$6,467	MH70	20		89	1.78	$11,015	48	52	13,978	4,119	9,859	($4,548)
9	I200	21	C			200	4.20	$4,850	MH70	15		89	1.34	$8,261	48	52	10,483	3,089	7,394	($3,411)
10	I200	17	C			200	3.40	$4,022	MH70	12		89	1.07	$6,609	48	52	8,486	2,471	6,015	($2,587)
11	I200	17	C			200	3.40	$4,022	MH70	12		89	1.07	$6,609	48	52	8,486	2,471	6,015	($2,587)
11A	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	412	1,086	($313)
12	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	824	2,171	($626)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	312	143	170	($634)
13	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,236	3,257	($939)
14	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,442	3,550	($1,450)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	206	792	$177
15	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,288	48	52	2,995	824	2,171	($711)
16	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	206	792	$177
17	I200		C			200	0.00	$749	MH70	1		89	0.09	$572	48	52	0	206	(206)	$177
18	I200		C			200	0.00	$1,617	MH70	5		89	0.45	$2,860	48	52	0	1,030	(1,030)	($1,243)
New Panel								$1,500												$1,500
Building Total		188					37.53	$50,175		136			12.08	$75,304			93,663	27,946	65,717	($25,129)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	227	772	$132
2	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,359	3,134	($1,336)
3	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,359	3,134	($1,336)
4	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	453	1,045	($445)
5	I200	3	C	150	14	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	453	1,045	($445)
6	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,133	2,362	($1,468)
	I200	14	C			200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,265	4,724	($2,936)
7	I200	6	C	80	7	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	906	2,089	($891)
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,586	3,406	($1,913)
7A	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	453	1,045	($445)
8	I200	28	C			200	5.60	$6,467	HP70	20		99	1.98	$12,339	48	52	13,978	4,530	9,447	($5,872)
9	I200	21	C			200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,398	7,085	($4,404)
10	I200	17	C			200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,718	5,768	($3,381)
11	I200	17	C			200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,718	5,768	($3,381)
11A	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	453	1,045	($445)
12	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	906	2,089	($891)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	312	143	170	($634)
13	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,359	3,134	($1,336)
14	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,586	3,406	($1,913)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	227	772	$132
15	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	906	2,089	($891)
16	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	227	772	$132
17	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	227	772	$132
18	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,133	2,362	($1,468)
New Panel								$1,500												$1,500
Building Total		197					39.33	$50,175		136			13.43	$83,982			98,156	30,723	67,433	($33,807)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
2	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
3	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
4	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
5	I200	3	C	150	14	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
6	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	I200	14	C			200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
7	I200	6	C	80	7	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
7A	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
8	I200	28	C			200	5.60	$6,467	MH70	20		89	1.78	$11,015	48	52	13,978	4,443	9,535	($4,548)
9	I200	21	C			200	4.20	$4,850	MH70	15		89	1.34	$8,261	48	52	10,483	3,332	7,151	($3,411)
10	I200	17	C			200	3.40	$4,022	MH70	12		89	1.07	$6,609	48	52	8,486	2,666	5,821	($2,587)
11	I200	17	C			200	3.40	$4,022	MH70	12		89	1.07	$6,609	48	52	8,486	2,666	5,821	($2,587)
11A	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
12	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	312	312	0	$0
13	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
14	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
15	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
16	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
17	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
18	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
New Panel								$1,500												$1,500
Building Total	197						39.33	$50,175		135			12.15	$74,415			98,156	30,302	67,854	($24,240)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
2	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
3	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
4	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
5	I200	3	C	150	14	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
6	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	I200	14	C			200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
7	I200	6	C	80	7	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
7A	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
8	I200	28	C			200	5.60	$6,467	HP70	20		99	1.98	$12,339	48	52	13,978	4,942	9,036	($5,872)
9	I200	21	C			200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,707	6,777	($4,404)
10	I200	17	C			200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,965	5,521	($3,381)
11	I200	17	C			200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,965	5,521	($3,381)
11A	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
12	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	312	312	0	$0
13	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
14	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
15	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
16	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
17	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
18	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
New Panel								$1,500												$1,500
Building Total		197					39.33	$50,175		135			13.50	$83,348			98,156	33,671	64,484	($33,173)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparision					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	140	858	$145
2	I200	9	C			200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	840	3,653	($1,255)
3	I200	9	C			200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	840	3,653	($1,255)
4	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	280	1,218	($418)
5	I200	3	C	150	14	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	280	1,218	($418)
6	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	700	2,795	($1,400)
	I200	14	C			200	2.80	$3,233	HP50	10		58	0.58	$6,033	48	52	6,989	1,399	5,589	($2,800)
7	I200	6	C	80	7	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	560	2,435	($836)
	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	980	4,012	($1,818)
7A	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	280	1,218	($418)
8	I200	28	C			200	5.60	$6,467	HP50	20		58	1.16	$12,066	48	52	13,978	2,799	11,179	($5,599)
9	I200	21	C			200	4.20	$4,850	HP50	15		58	0.87	$9,050	48	52	10,483	2,099	8,384	($4,199)
10	I200	17	C			200	3.40	$4,022	HP50	12		58	0.70	$7,240	48	52	8,486	1,679	6,807	($3,218)
11	I200	17	C			200	3.40	$4,022	HP50	12		58	0.70	$7,240	48	52	8,486	1,679	6,807	($3,218)
11A	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	280	1,218	($418)
12	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	560	2,435	($836)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	312	143	170	($634)
13	I200	9	C			200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	840	3,653	($1,255)
14	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	980	4,012	($1,818)
	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	140	858	$145
15	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	560	2,435	($836)
16	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	140	858	$145
17	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	140	858	$145
18	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	700	2,795	($1,400)
New Panel								$1,500												$1,500
Building Total		197					39.33	$50,175		136			7.89	$82,143			98,156	19,036	79,120	($31,968)

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	2	C	20	19	380	6.16	30%	30%	20%	0.232	1	3400	6800	0.86	3.59
2	I200	9	C	130	10	1300	6.46	30%	30%	20%	0.223	1	3400	30600	0.86	4.54
3	I200	9	C	27	19	513	5.38	30%	30%	20%	0.255	1	3400	30600	0.86	13.15
4	I200	3	C	19	10	190	9.16	30%	30%	20%	0.160	1	3400	10200	0.86	7.43
5	I200	3	C	19	8	152	10.66	30%	30%	20%	0.140	1	3400	10200	0.86	8.12
6	I200	7	C	50	19	950	4.36	30%	30%	20%	0.293	1	3400	23800	0.86	6.35
	I200	14	C	50	19	950	4.36	30%	30%	20%	0.293	1	3400	47600	0.86	12.69
7	I200	6	C	41	19	779	4.62	30%	30%	20%	0.282	1	3400	20400	0.86	6.38
	I200	10	C	41	19	779	4.62	30%	30%	20%	0.282	1	3400	34000	0.86	10.64
7A	I200	3	C	12	9	108	11.67	30%	30%	20%	0.140	1	3400	10200	0.86	11.43
8	I200	28	C	50	19	950	4.36	30%	30%	20%	0.293	1	3400	95200	0.86	25.38
9	I200	21	C	50	19	950	4.36	30%	30%	20%	0.293	1	3400	71400	0.86	19.04
10	I200	17	C	50	19	950	4.36	30%	30%	20%	0.293	1	3400	57800	0.86	15.41
11	I200	17	C	41	19	779	4.62	30%	30%	20%	0.282	1	3400	57800	0.86	18.09
11A	I200	3	C	12	9	108	11.67	30%	30%	20%	0.140	1	3400	10200	0.86	11.43
12	I200	6	C	142	7.5	1065	8.42	30%	30%	20%	0.175	1	3400	20400	0.86	2.90
	F312	1	C	142	7.5	1065	8.42	30%	30%	20%						
13	I200	9	C	30	14	420	6.29	30%	30%	20%	0.228	1	3400	30600	0.86	14.36
14	I200	10	C	30	20	600	5.00	30%	30%	20%	0.266	1	3400	34000	0.86	13.03
	I200	2	C	30	20	600	5.00	30%	30%	20%	0.266	1	3400	6800	0.86	2.61
15	I200	6	C	22	14	308	7.01	30%	30%	20%	0.208	1	3400	20400	0.86	11.91
16	I200	2	C	7	9	63	15.24	30%	30%	20%	0.140	1	3400	6800	0.86	13.06
17	I200	2	C	7	9	63	15.24	30%	30%	20%	0.140	1	3400	6800	0.86	13.06
18	I200	7	C	19	22	418	5.89	30%	30%	20%	0.239	1	3400	23800	0.86	11.76

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	1	C	20	19	380	6.16	30%	30%	20%	0.195	1	4000	4000	0.90	1.85
2	MH70	6	C	130	10	1300	6.46	30%	30%	20%	0.188	1	4000	24000	0.90	3.13
3	MH70	6	C	27	19	513	5.38	30%	30%	20%	0.216	1	4000	24000	0.90	9.12
4	MH70	2	C	19	10	190	9.16	30%	30%	20%	0.133	1	4000	8000	0.90	5.05
5	MH70	2	C	19	8	152	10.66	30%	30%	20%	0.115	1	4000	8000	0.90	5.46
6	MH70	5	C	50	19	950	4.36	30%	30%	20%	0.252	1	4000	20000	0.90	4.79
	MH70	10	C	50	19	950	4.36	30%	30%	20%	0.252	1	4000	40000	0.90	9.57
7	MH70	4	C	41	19	779	4.62	30%	30%	20%	0.242	1	4000	16000	0.90	4.48
	MH70	7	C	41	19	779	4.62	30%	30%	20%	0.242	1	4000	28000	0.90	7.85
7A	MH70	2	C	12	9	108	11.67	30%	30%	20%	0.115	1	4000	8000	0.90	7.68
8	MH70	20	C	50	19	950	4.36	30%	30%	20%	0.252	1	4000	80000	0.90	19.14
9	MH70	15	C	50	19	950	4.36	30%	30%	20%	0.252	1	4000	60000	0.90	14.36
10	MH70	12	C	50	19	950	4.36	30%	30%	20%	0.252	1	4000	48000	0.90	11.49
11	MH70	12	C	41	19	779	4.62	30%	30%	20%	0.242	1	4000	48000	0.90	13.45
11A	MH70	2	C	12	9	108	11.67	30%	30%	20%	0.115	1	4000	8000	0.90	7.68
12	MH70	4	C	142	7.5	1065	8.42	30%	30%	20%	0.145	1	4000	16000	0.90	1.97
	F208	1	C	142	7.5	1065	8.42	30%	30%	20%						
13	MH70	6	C	30	14	420	6.29	30%	30%	20%	0.192	1	4000	24000	0.90	9.90
14	MH70	7	C	30	20	600	5.00	30%	30%	20%	0.227	1	4000	28000	0.90	9.56
	MH70	1	C	30	20	600	5.00	30%	30%	20%	0.227	1	4000	4000	0.90	1.37
15	MH70	4	C	22	14	308	7.01	30%	30%	20%	0.174	1	4000	16000	0.90	8.15
16	MH70	1	C	7	9	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
17	MH70	1	C	7	9	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
18	MH70	5	C	19	22	418	5.89	30%	30%	20%	0.202	1	4000	20000	0.90	8.72

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	1	C	20	19	380	6.16	30%	30%	20%	0.306	1	5450	5450	0.94	4.13
2	HP70	6	C	130	10	1300	6.46	30%	30%	20%	0.294	1	5450	32700	0.94	6.96
3	HP70	6	C	27	19	513	5.38	30%	30%	20%	0.340	1	5450	32700	0.94	20.39
4	HP70	2	C	19	10	190	9.16	30%	30%	20%	0.205	1	5450	10900	0.94	11.07
5	HP70	2	C	19	8	152	10.66	30%	30%	20%	0.178	1	5450	10900	0.94	12.01
6	HP70	5	C	50	19	950	4.36	30%	30%	20%	0.397	1	5450	27250	0.94	10.71
	HP70	10	C	50	19	950	4.36	30%	30%	20%	0.397	1	5450	54500	0.94	21.43
7	HP70	4	C	41	19	779	4.62	30%	30%	20%	0.381	1	5450	21800	0.94	10.03
	HP70	7	C	41	19	779	4.62	30%	30%	20%	0.381	1	5450	38150	0.94	17.56
7A	HP70	2	C	12	9	108	11.67	30%	30%	20%	0.178	1	5450	10900	0.94	16.90
8	HP70	20	C	50	19	950	4.36	30%	30%	20%	0.397	1	5450	109000	0.94	42.86
9	HP70	15	C	50	19	950	4.36	30%	30%	20%	0.397	1	5450	81750	0.94	32.14
10	HP70	12	C	50	19	950	4.36	30%	30%	20%	0.397	1	5450	65400	0.94	25.72
11	HP70	12	C	41	19	779	4.62	30%	30%	20%	0.381	1	5450	65400	0.94	30.10
11A	HP70	2	C	12	9	108	11.67	30%	30%	20%	0.178	1	5450	10900	0.94	16.90
12	HP70	4	C	142	7.5	1065	8.42	30%	30%	20%	0.226	1	5450	21800	0.94	4.35
	F208	1	C	142	7.5	1065	8.42	30%	30%	20%						
13	HP70	6	C	30	14	420	6.29	30%	30%	20%	0.300	1	5450	32700	0.94	21.98
14	HP70	7	C	30	20	600	5.00	30%	30%	20%	0.357	1	5450	38150	0.94	21.36
	HP70	1	C	30	20	600	5.00	30%	30%	20%	0.357	1	5450	5450	0.94	3.05
15	HP70	4	C	22	14	308	7.01	30%	30%	20%	0.272	1	5450	21800	0.94	18.11
16	HP70	1	C	7	9	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
17	HP70	1	C	7	9	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
18	HP70	5	C	19	22	418	5.89	30%	30%	20%	0.317	1	5450	27250	0.94	19.44

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	1	C	20	19	380	6.16	30%	30%	20%	0.195	1	4000	4000	0.90	1.85
2	MH70	6	C	130	10	1300	6.46	30%	30%	20%	0.188	1	4000	24000	0.90	3.13
3	MH70	6	C	27	19	513	5.38	30%	30%	20%	0.216	1	4000	24000	0.90	9.12
4	MH70	2	C	19	10	190	9.16	30%	30%	20%	0.133	1	4000	8000	0.90	5.05
5	MH70	2	C	19	8	152	10.66	30%	30%	20%	0.115	1	4000	8000	0.90	5.46
6	MH70	5	C	50	19	950	4.36	30%	30%	20%	0.252	1	4000	20000	0.90	4.79
	MH70	10	C	50	19	950	4.36	30%	30%	20%	0.252	1	4000	40000	0.90	9.57
7	MH70	4	C	41	19	779	4.62	30%	30%	20%	0.242	1	4000	16000	0.90	4.48
	MH70	7	C	41	19	779	4.62	30%	30%	20%	0.242	1	4000	28000	0.90	7.85
7A	MH70	2	C	12	9	108	11.67	30%	30%	20%	0.115	1	4000	8000	0.90	7.68
8	MH70	20	C	50	19	950	4.36	30%	30%	20%	0.252	1	4000	80000	0.90	19.14
9	MH70	15	C	50	19	950	4.36	30%	30%	20%	0.252	1	4000	60000	0.90	14.36
10	MH70	12	C	50	19	950	4.36	30%	30%	20%	0.252	1	4000	48000	0.90	11.49
11	MH70	12	C	41	19	779	4.62	30%	30%	20%	0.242	1	4000	48000	0.90	13.45
11A	MH70	2	C	12	9	108	11.67	30%	30%	20%	0.115	1	4000	8000	0.90	7.68
12	MH70	4	C	142	7.5	1065	8.42	30%	30%	20%	0.145	1	4000	16000	0.90	1.97
	F312	1	C	142	7.5	1065	8.42	30%	30%	20%						
13	MH70	6	C	30	14	420	6.29	30%	30%	20%	0.192	1	4000	24000	0.90	9.90
14	MH70	7	C	30	20	600	5.00	30%	30%	20%	0.227	1	4000	28000	0.90	9.56
	MH70	1	C	30	20	600	5.00	30%	30%	20%	0.227	1	4000	4000	0.90	1.37
15	MH70	4	C	22	14	308	7.01	30%	30%	20%	0.174	1	4000	16000	0.90	8.15
16	MH70	1	C	7	9	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
17	MH70	1	C	7	9	63	15.24	30%	30%	20%	0.115	1	4000	4000	0.90	6.59
18	MH70	5	C	19	22	418	5.89	30%	30%	20%	0.202	1	4000	20000	0.90	8.72

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	1	C	20	19	380	6.16	30%	30%	20%	0.306	1	5450	5450	0.94	4.13
2	HP70	6	C	130	10	1300	6.46	30%	30%	20%	0.294	1	5450	32700	0.94	6.96
3	HP70	6	C	27	19	513	5.38	30%	30%	20%	0.340	1	5450	32700	0.94	20.39
4	HP70	2	C	19	10	190	9.16	30%	30%	20%	0.205	1	5450	10900	0.94	11.07
5	HP70	2	C	19	8	152	10.66	30%	30%	20%	0.178	1	5450	10900	0.94	12.01
6	HP70	5	C	50	19	950	4.36	30%	30%	20%	0.397	1	5450	27250	0.94	10.71
	HP70	10	C	50	19	950	4.36	30%	30%	20%	0.397	1	5450	54500	0.94	21.43
7	HP70	4	C	41	19	779	4.62	30%	30%	20%	0.381	1	5450	21800	0.94	10.03
	HP70	7	C	41	19	779	4.62	30%	30%	20%	0.381	1	5450	38150	0.94	17.56
7A	HP70	2	C	12	9	108	11.67	30%	30%	20%	0.178	1	5450	10900	0.94	16.90
8	HP70	20	C	50	19	950	4.36	30%	30%	20%	0.397	1	5450	109000	0.94	42.86
9	HP70	15	C	50	19	950	4.36	30%	30%	20%	0.397	1	5450	81750	0.94	32.14
10	HP70	12	C	50	19	950	4.36	30%	30%	20%	0.397	1	5450	65400	0.94	25.72
11	HP70	12	C	41	19	779	4.62	30%	30%	20%	0.381	1	5450	65400	0.94	30.10
11A	HP70	2	C	12	9	108	11.67	30%	30%	20%	0.178	1	5450	10900	0.94	16.90
12	HP70	4	C	142	7.5	1065	8.42	30%	30%	20%	0.226	1	5450	21800	0.94	4.35
	F312	1	C	142	7.5	1065	8.42	30%	30%	20%						
13	HP70	6	C	30	14	420	6.29	30%	30%	20%	0.300	1	5450	32700	0.94	21.98
14	HP70	7	C	30	20	600	5.00	30%	30%	20%	0.357	1	5450	38150	0.94	21.36
	HP70	1	C	30	20	600	5.00	30%	30%	20%	0.357	1	5450	5450	0.94	3.05
15	HP70	4	C	22	14	308	7.01	30%	30%	20%	0.272	1	5450	21800	0.94	18.11
16	HP70	1	C	7	9	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
17	HP70	1	C	7	9	63	15.24	30%	30%	20%	0.178	1	5450	5450	0.94	14.49
18	HP70	5	C	19	22	418	5.89	30%	30%	20%	0.317	1	5450	27250	0.94	19.44

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	1	C	20	19	380	6.16	30%	30%	20%	0.306	1	3600	3600	0.94	2.73
2	HP50	6	C	130	10	1300	6.46	30%	30%	20%	0.294	1	3600	21600	0.94	4.60
3	HP50	6	C	27	19	513	5.38	30%	30%	20%	0.340	1	3600	21600	0.94	13.47
4	HP50	2	C	19	10	190	9.16	30%	30%	20%	0.205	1	3600	7200	0.94	7.31
5	HP50	2	C	19	8	152	10.66	30%	30%	20%	0.178	1	3600	7200	0.94	7.93
6	HP50	5	C	50	19	950	4.36	30%	30%	20%	0.397	1	3600	18000	0.94	7.08
	HP50	10	C	50	19	950	4.36	30%	30%	20%	0.397	1	3600	36000	0.94	14.16
7	HP50	4	C	41	19	779	4.62	30%	30%	20%	0.381	1	3600	14400	0.94	6.63
	HP50	7	C	41	19	779	4.62	30%	30%	20%	0.381	1	3600	25200	0.94	11.60
7A	HP50	2	C	12	9	108	11.67	30%	30%	20%	0.178	1	3600	7200	0.94	11.17
8	HP50	20	C	50	19	950	4.36	30%	30%	20%	0.397	1	3600	72000	0.94	28.31
9	HP50	15	C	50	19	950	4.36	30%	30%	20%	0.397	1	3600	54000	0.94	21.23
10	HP50	12	C	50	19	950	4.36	30%	30%	20%	0.397	1	3600	43200	0.94	16.99
11	HP50	12	C	41	19	779	4.62	30%	30%	20%	0.381	1	3600	43200	0.94	19.88
11A	HP50	2	C	12	9	108	11.67	30%	30%	20%	0.178	1	3600	7200	0.94	11.17
12	HP50	4	C	142	7.5	1065	8.42	30%	30%	20%	0.226	1	3600	14400	0.94	2.88
	F208	1	C	142	7.5	1065	8.42	30%	30%	20%						
13	HP50	6	C	30	14	420	6.29	30%	30%	20%	0.300	1	3600	21600	0.94	14.52
14	HP50	7	C	30	20	600	5.00	30%	30%	20%	0.357	1	3600	25200	0.94	14.11
	HP50	1	C	30	20	600	5.00	30%	30%	20%	0.357	1	3600	3600	0.94	2.02
15	HP50	4	C	22	14	308	7.01	30%	30%	20%	0.272	1	3600	14400	0.94	11.97
16	HP50	1	C	7	9	63	15.24	30%	30%	20%	0.178	1	3600	3600	0.94	9.57
17	HP50	1	C	7	9	63	15.24	30%	30%	20%	0.178	1	3600	3600	0.94	9.57
18	HP50	5	C	19	22	418	5.89	30%	30%	20%	0.317	1	3600	18000	0.94	12.84

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
2	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
3	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
4	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
5	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
6	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	I200	14	C	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
7	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
7A	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
8	I200	28	C	2496	1	700	99.8	$995	0.0	$0	9.3	$147	$1,142
9	I200	21	C	2496	1	700	74.9	$747	0.0	$0	7.0	$110	$857
10	I200	17	C	2496	1	700	60.6	$604	0.0	$0	5.7	$89	$693
11	I200	17	C	2496	1	700	60.6	$604	0.0	$0	5.7	$89	$693
11A	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
12	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
13	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
14	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
15	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
16	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
17	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
18	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
Building Total		197						$6,972		$2		$1,033	$8,007

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
3	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
4	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
5	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
6	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
7	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
7A	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
8	MH70	20	C	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	$279
9	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
10	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
11	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
11A	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
12	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
13	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
14	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
15	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
16	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
17	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
18	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
Building Total		136						$4,165		$488		$1,183	$5,836	$2,172

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
3	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
4	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
5	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
6	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
7	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
7A	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
8	HP70	20	C	2496	1	16800	3.0	$118	0.4	$74	6.7	$174	$366	$776
9	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
10	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
11	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
11A	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
12	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
13	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
14	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
15	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
16	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
17	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
18	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
Building Total		136						$797		$504		$1,183	$2,484	$5,523

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
3	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
4	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
5	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
6	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
7	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
7A	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
8	MH70	20	C	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	$279
9	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
10	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
11	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
11A	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
12	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
13	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
14	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
15	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
16	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
17	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
18	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
Building Total		136						$4,167		$488		$1,183	$5,838	$2,169

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
3	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
4	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
5	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
6	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
7	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
7A	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
8	HP70	20	C	2496	1	16800	3.0	$118	0.4	$74	6.7	$174	$366	$776
9	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
10	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
11	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
11A	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
12	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
13	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
14	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
15	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
16	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
17	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
18	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
Building Total		136						$799		$504		$1,183	$2,486	$5,521

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line D
Building D-41
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
2	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
3	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
4	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
5	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
6	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
	HP50	10	C	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$383
7	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
7A	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
8	HP50	20	C	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$767
9	HP50	15	C	2496	1	16800	2.2	$97	0.3	$54	5.0	$131	$282	$575
10	HP50	12	C	2496	1	16800	1.8	$77	0.2	$43	4.0	$105	$225	$468
11	HP50	12	C	2496	1	16800	1.8	$77	0.2	$43	4.0	$105	$225	$468
11A	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
12	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
13	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
14	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
15	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
16	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
17	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
18	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
Building Total		136						$874		$488		$1,183	$2,545	$5,463

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1																									
2	I200	10	9-0	C	36	240	22	200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
3	F312	6	9-0	C	36	320	30	132	0.79	$266	$27	$84	F312	0	132	0.00	$0	F312	6	48	52	1,977	0	1,977	$376
4	I200	14	7-3	C	36	240	22	200	2.80	$360	$0	$198	I200	6	200	1.20	$4,252	I200	20	48	52	6,989	2,995	9,984	$4,810
	F312	1	7-3	C	30	460	43	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
5	I200	6	9-0	C	36	185	17	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
6	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
7	I200	6	9-0	C				200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
8	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
9	F212	2	9-0	C	36	400	37	82	0.16	$75	$7	$30	F212	0	82	0.00	$0	F212	2	48	52	409	0	409	$111
	I200	2	9-0	C	36	400	37	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
10	F312	2	9-2	C	48	900	84	132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	I200	8	9-2	C	36	300	28	200	1.60	$206	$0	$113	I200	4	200	0.80	$2,835	I200	12	48	52	3,994	1,997	5,990	$3,154
11	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
12	I200	1	9-0	R				200	0.20	$26	$0	$14	I200	0	200	0.00	$0	I200	1	48	52	499	0	499	$40
RS	I200	6	9-0	R				200	1.20	$154	$0	$85	I200	0	200	0.00	$0	I200	6	48	52	2,995	0	2,995	$239
RE	I200	5	9-0	R				200	1.00	$128	$0	$71	I200	0	200	0.00	$0	I200	5	48	52	2,496	0	2,496	$199
RW	I200	3	9-0	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
RN	I200	6	9-0	R				200	1.20	$154	$0	$85	I200	0	200	0.00	$0	I200	6	48	52	2,995	0	2,995	$239
New Panel																	$1,500								$1,500
Building Total		82							15.55	$2,297	$48	$1,161		24		4.80	$18,509					38,818	11,981	50,799	$22,015

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1																				
2	I200	14	C	240	22	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,059	4,929	($2,274)
3	F312	6	C	320	30	132	0.79	$376	F208	6		62	0.37	$4,178	48	52	1,875	857	1,018	($3,802)
4	I200	20	C	240	22	200	4.00	$4,810	MH70	14		89	1.25	$7,711	48	52	9,984	2,883	7,101	($2,900)
	F312	1	C	460	43	132	0.13	$63	F208	1		62	0.06	$696	48	52	312	143	170	($634)
5	I200	9	C	185	17	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,236	3,257	($939)
6	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	412	1,086	($313)
7	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,236	3,257	($939)
8	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	206	792	$198
9	F212	2	C	400	37	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	389	286	103	($1,281)
	I200	3	C	400	37	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	412	1,086	($313)
10	F312	2	C	900	84	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	625	286	339	($1,267)
	I200	12	C	300	28	200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,648	4,343	($1,252)
11	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	206	792	$198
12	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	206	293	($511)
RS	I200	6	R			200	1.20	$239	MH70	6		89	0.53	$3,305	48	52	2,995	1,236	1,760	($3,065)
RE	I200	5	R			200	1.00	$199	MH70	5		89	0.45	$2,754	48	52	2,496	1,030	1,466	($2,554)
RW	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	618	880	($1,533)
RN	I200	6	R			200	1.20	$239	MH70	6		89	0.53	$3,305	48	52	2,995	1,236	1,760	($3,065)
New Panel								$1,500												$1,500
Building Total		106					20.35	$22,015		82			7.00	$46,764			50,624	16,193	34,432	($24,749)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1																				
2	I200	14	C	240	22	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,265	4,724	($2,936)
3	F312	6	C	320	30	132	0.79	$376	F208	6		62	0.37	$4,178	48	52	1,875	857	1,018	($3,802)
4	I200	20	C	240	22	200	4.00	$4,810	HP70	14		99	1.39	$8,637	48	52	9,984	3,171	6,813	($3,827)
	F312	1	C	460	43	132	0.13	$63	F208	1		62	0.06	$696	48	52	312	143	170	($634)
5	I200	9	C	185	17	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,359	3,134	($1,336)
6	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	453	1,045	($445)
7	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,359	3,134	($1,336)
8	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	227	772	$132
9	F212	2	C	400	37	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	389	286	103	($1,281)
	I200	3	C	400	37	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	453	1,045	($445)
10	F312	2	C	900	84	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	625	286	339	($1,267)
	I200	12	C	300	28	200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,812	4,178	($1,782)
11	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	227	772	$132
12	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	140	359	($563)
RS	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	840	2,156	($3,381)
RE	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	700	1,796	($2,817)
RW	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	420	1,078	($1,690)
RN	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	840	2,156	($3,381)
New Panel								$1,500												$1,500
Building Total		106					20.35	$22,015		82			6.85	$51,176			50,624	15,835	34,789	($29,161)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1																				
2	I200	14	C	240	22	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
3	F312	6	C	320	30	132	0.79	$376	F312	0		132	0.79	$376	48	52	1,875	1,875	0	$0
4	I200	20	C	240	22	200	4.00	$4,810	MH70	14		89	1.25	$7,711	48	52	9,984	3,110	6,874	($2,900)
	F312	1	C	460	43	132	0.13	$63	F312	0		132	0.13	$63	48	52	312	312	0	$0
5	I200	9	C	185	17	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
6	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
7	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
8	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
9	F212	2	C	400	37	82	0.16	$111	F212	0		82	0.16	$111	48	52	389	389	0	$0
	I200	3	C	400	37	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
10	F312	2	C	900	84	132	0.26	$125	F312	0		132	0.26	$125	48	52	625	625	0	$0
	I200	12	C	300	28	200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
11	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
12	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
RS	I200	6	R			200	1.20	$239	MH70	6		89	0.53	$3,305	48	52	2,995	1,333	1,662	($3,065)
RE	I200	5	R			200	1.00	$199	MH70	5		89	0.45	$2,754	48	52	2,496	1,111	1,385	($2,554)
RW	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
RN	I200	6	R			200	1.20	$239	MH70	6		89	0.53	$3,305	48	52	2,995	1,333	1,662	($3,065)
New Panel								$1,500												$1,500
Building Total		106					20.35	$22,015		71			7.67	$39,780			50,624	18,973	31,652	($17,765)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1																				
2	I200	14	C	240	22	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
3	F312	6	C	320	30	132	0.79	$376	F312	0		132	0.79	$376	48	52	1,875	1,875	0	$0
4	I200	20	C	240	22	200	4.00	$4,810	HP70	14		99	1.39	$8,637	48	52	9,984	3,459	6,525	($3,827)
	F312	1	C	460	43	132	0.13	$63	F312	0		132	0.13	$63	48	52	312	312	0	$0
5	I200	9	C	185	17	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
6	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
7	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
8	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
9	F212	2	C	400	37	82	0.16	$111	F212	0		82	0.16	$111	48	52	389	389	0	$0
	I200	3	C	400	37	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
10	F312	2	C	900	84	132	0.26	$125	F312	0		132	0.26	$125	48	52	625	625	0	$0
	I200	12	C	300	28	200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
11	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
12	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
RS	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	869	2,127	($3,381)
RE	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
RW	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
RN	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	869	2,127	($3,381)
New Panel								$1,500												$1,500
Building Total	106						20.35	$22,015		71			7.52	$44,192			50,624	18,596	32,029	($22,177)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1																				
2	I200	14	C	240	22	200	2.80	$3,233	HP50	10		58	0.58	$6,033	48	52	6,989	1,399	5,589	($2,800)
3	F312	6	C	320	30	132	0.79	$376	F208	6		62	0.37	$4,178	48	52	1,875	857	1,018	($3,802)
4	I200	20	C	240	22	200	4.00	$4,810	HP50	14		58	0.81	$8,446	48	52	9,984	1,959	8,025	($3,636)
	F312	1	C	460	43	132	0.13	$63	F208	1		62	0.06	$696	48	52	312	143	170	($634)
5	I200	9	C	185	17	200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	840	3,653	($1,255)
6	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	280	1,218	($418)
7	I200	9	C			200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	840	3,653	($1,255)
8	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	140	858	$145
9	F212	2	C	400	37	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	389	286	103	($1,281)
	I200	3	C	400	37	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	280	1,218	($418)
10	F312	2	C	900	84	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	625	286	339	($1,267)
	I200	12	C	300	28	200	2.40	$3,154	HP50	8		58	0.46	$4,826	48	52	5,990	1,120	4,871	($1,673)
11	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	140	858	$145
12	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	140	359	($563)
RS	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	840	2,156	($3,381)
RE	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	700	1,796	($2,817)
RW	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	420	1,078	($1,690)
RN	I200	6	R			200	1.20	$239	HP50	6		58	0.35	$3,620	48	52	2,995	840	2,156	($3,381)
New Panel								$1,500												$1,500
Building Total	106						20.35	$22,015		82			4.80	$50,495			50,624	11,507	39,118	($28,480)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1				10	7											
2	I200	14	C	49	19	931	4.38	30%	30%	20%	0.292	1	3400	47600	0.86	12.91
3	F312	6	C	19.5	18	351	6.41	30%	30%	20%						
4	I200	20	C	49	20	980	4.22	30%	30%	20%	0.299	1	3400	68000	0.86	17.94
	F312	1	C	49	20	980	4.22	30%	30%	20%						
5	I200	9	C	16	10	160	9.75	30%	30%	20%	0.146	1	3400	30600	0.86	24.14
6	I200	3	C	16	9	144	10.42	30%	30%	20%	0.140	1	3400	10200	0.86	8.57
7	I200	9	C	19	11	209	8.61	30%	30%	20%	0.171	1	3400	30600	0.86	21.64
8	I200	2	C	19	10	190	9.16	30%	30%	20%	0.160	1	3400	6800	0.86	4.95
9	F212	2	C	19	10	190	9.16	30%	30%	20%						
	I200	3	C	19	10	190	9.16	30%	30%	20%	0.160	1	3400	10200	0.86	7.43
10	F312	2	C	30	19	570	5.16	30%	30%	20%						
	I200	12	C	30	19	570	5.16	30%	30%	20%	0.261	1	3400	40800	0.86	16.15
11	I200	2	C	12	10	120	11.00	30%	30%	20%	0.140	1	3400	6800	0.86	6.86
12	I200	1	R	11	6	66	6.44	30%	30%	20%	0.244	1	3400	3400	0.86	10.87
RS	I200	6	R	93	5	465	5.27	30%	30%	20%	0.258	1	3400	20400	0.86	9.79
RE	I200	5	R	50	5	250	5.50	30%	30%	20%	0.251	1	3400	17000	0.86	14.76
RW	I200	3	R	50	5	250	5.50	30%	30%	20%	0.251	1	3400	10200	0.86	8.85
RN	I200	6	R	93	5	465	5.27	30%	30%	20%	0.258	1	3400	20400	0.86	9.79

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1																
2	MH70	10	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	40000	0.90	9.73
3	F208	6	C	19.5	18	351	6.41	30%	30%	20%						
4	MH70	14	C	49	20	980	4.22	30%	30%	20%	0.257	1	4000	56000	0.90	13.25
	F208	1	C	49	20	980	4.22	30%	30%	20%						
5	MH70	6	C	16	10	160	9.75	30%	30%	20%	0.124	1	4000	24000	0.90	16.78
6	MH70	2	C	16	9	144	10.42	30%	30%	20%	0.115	1	4000	8000	0.90	5.76
7	MH70	6	C	19	11	209	8.61	30%	30%	20%	0.142	1	4000	24000	0.90	14.71
8	MH70	1	C	19	10	190	9.16	30%	30%	20%	0.133	1	4000	4000	0.90	2.53
9	F208	2	C	19	10	190	9.16	30%	30%	20%						
	MH70	2	C	19	10	190	9.16	30%	30%	20%	0.133	1	4000	8000	0.90	5.05
10	F208	2	C	30	19	570	5.16	30%	30%	20%						
	MH70	8	C	30	19	570	5.16	30%	30%	20%	0.223	1	4000	32000	0.90	11.29
11	MH70	1	C	12	10	120	11.00	30%	30%	20%	0.115	1	4000	4000	0.90	3.46
12	MH70	1	R	11	6	66	6.44	30%	30%	20%	0.188	1	4000	4000	0.90	10.28
RS	MH70	6	R	93	5	465	5.27	30%	30%	20%	0.219	1	4000	24000	0.90	10.20
RE	MH70	5	R	50	5	250	5.50	30%	30%	20%	0.213	1	4000	20000	0.90	15.37
RW	MH70	3	R	50	5	250	5.50	30%	30%	20%	0.213	1	4000	12000	0.90	9.22
RN	MH70	6	R	93	5	465	5.27	30%	30%	20%	0.219	1	4000	24000	0.90	10.20

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1																
2	HP70	10	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	54500	0.94	21.76
3	F208	6	C	19.5	18	351	6.41	30%	30%	20%						
4	HP70	14	C	49	20	980	4.22	30%	30%	20%	0.405	1	5450	76300	0.94	29.67
	F208	1	C	49	20	980	4.22	30%	30%	20%						
5	HP70	6	C	16	10	160	9.75	30%	30%	20%	0.186	1	5450	32700	0.94	35.77
6	HP70	2	C	16	9	144	10.42	30%	30%	20%	0.178	1	5450	10900	0.94	12.68
7	HP70	6	C	19	11	209	8.61	30%	30%	20%	0.221	1	5450	32700	0.94	32.53
8	HP70	1	C	19	10	190	9.16	30%	30%	20%	0.205	1	5450	5450	0.94	5.53
9	F208	2	C	19	10	190	9.16	30%	30%	20%						
	HP70	2	C	19	10	190	9.16	30%	30%	20%	0.205	1	5450	10900	0.94	11.07
10	F208	2	C	30	19	570	5.16	30%	30%	20%						
	HP70	8	C	30	19	570	5.16	30%	30%	20%	0.350	1	5450	43600	0.94	25.19
11	HP70	1	C	12	10	120	11.00	30%	30%	20%	0.178	1	5450	5450	0.94	7.61
12	HP50	1	R	11	6	66	6.44	30%	30%	20%	0.294	1	3600	3600	0.94	15.09
RS	HP50	6	R	93	5	465	5.27	30%	30%	20%	0.345	1	3600	21600	0.94	15.08
RE	HP50	5	R	50	5	250	5.50	30%	30%	20%	0.335	1	3600	18000	0.94	22.69
RW	HP50	3	R	50	5	250	5.50	30%	30%	20%	0.335	1	3600	10800	0.94	13.62
RN	HP50	6	R	93	5	465	5.27	30%	30%	20%	0.345	1	3600	21600	0.94	15.08

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1																
2	MH70	10	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	40000	0.90	9.73
3	F312	6	C	19.5	18	351	6.41	30%	30%	20%						
4	MH70	14	C	49	20	980	4.22	30%	30%	20%	0.257	1	4000	56000	0.90	13.25
	F312	1	C	49	20	980	4.22	30%	30%	20%						
5	MH70	6	C	16	10	160	9.75	30%	30%	20%	0.124	1	4000	24000	0.90	16.78
6	MH70	2	C	16	9	144	10.42	30%	30%	20%	0.115	1	4000	8000	0.90	5.76
7	MH70	6	C	19	11	209	8.61	30%	30%	20%	0.142	1	4000	24000	0.90	14.71
8	MH70	1	C	19	10	190	9.16	30%	30%	20%	0.133	1	4000	4000	0.90	2.53
9	F212	2	C	19	10	190	9.16	30%	30%	20%						
	MH70	2	C	19	10	190	9.16	30%	30%	20%	0.133	1	4000	8000	0.90	5.05
10	F312	2	C	30	19	570	5.16	30%	30%	20%						
	MH70	8	C	30	19	570	5.16	30%	30%	20%	0.223	1	4000	32000	0.90	11.29
11	MH70	1	C	12	10	120	11.00	30%	30%	20%	0.115	1	4000	4000	0.90	3.46
12	MH70	1	R	11	6	66	6.44	30%	30%	20%	0.188	1	4000	4000	0.90	10.28
RS	MH70	6	R	93	5	465	5.27	30%	30%	20%	0.219	1	4000	24000	0.90	10.20
RE	MH70	5	R	50	5	250	5.50	30%	30%	20%	0.213	1	4000	20000	0.90	15.37
RW	MH70	3	R	50	5	250	5.50	30%	30%	20%	0.213	1	4000	12000	0.90	9.22
RN	MH70	6	R	93	5	465	5.27	30%	30%	20%	0.219	1	4000	24000	0.90	10.20

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1																
2	HP70	10	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	54500	0.94	21.76
3	F312	6	C	19.5	18	351	6.41	30%	30%	20%						
4	HP70	14	C	49	20	980	4.22	30%	30%	20%	0.405	1	5450	76300	0.94	29.67
	F312	1	C	49	20	980	4.22	30%	30%	20%						
5	HP70	6	C	16	10	160	9.75	30%	30%	20%	0.186	1	5450	32700	0.94	35.77
6	HP70	2	C	16	9	144	10.42	30%	30%	20%	0.178	1	5450	10900	0.94	12.68
7	HP70	6	C	19	11	209	8.61	30%	30%	20%	0.221	1	5450	32700	0.94	32.53
8	HP70	1	C	19	10	190	9.16	30%	30%	20%	0.205	1	5450	5450	0.94	5.53
9	F212	2	C	19	10	190	9.16	30%	30%	20%						
	HP70	2	C	19	10	190	9.16	30%	30%	20%	0.205	1	5450	10900	0.94	11.07
10	F312	2	C	30	19	570	5.16	30%	30%	20%						
	HP70	8	C	30	19	570	5.16	30%	30%	20%	0.350	1	5450	43600	0.94	25.19
11	HP70	1	C	12	10	120	11.00	30%	30%	20%	0.178	1	5450	5450	0.94	7.61
12	HP50	1	R	11	6	66	6.44	30%	30%	20%	0.294	1	3600	3600	0.94	15.09
RS	HP50	6	R	93	5	465	5.27	30%	30%	20%	0.345	1	3600	21600	0.94	15.08
RE	HP50	5	R	50	5	250	5.50	30%	30%	20%	0.335	1	3600	18000	0.94	22.69
RW	HP50	3	R	50	5	250	5.50	30%	30%	20%	0.335	1	3600	10800	0.94	13.62
RN	HP50	6	R	93	5	465	5.27	30%	30%	20%	0.345	1	3600	21600	0.94	15.08

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1																
2	HP50	10	C	49	19	931	4.38	30%	30%	20%	0.395	1	3600	36000	0.94	14.37
3	F208	6	C	19.5	18	351	6.41	30%	30%	20%						
4	HP50	14	C	49	20	980	4.22	30%	30%	20%	0.405	1	3600	50400	0.94	19.60
	F208	1	C	49	20	980	4.22	30%	30%	20%						
5	HP50	6	C	16	10	160	9.75	30%	30%	20%	0.186	1	3600	21600	0.94	23.63
6	HP50	2	C	16	9	144	10.42	30%	30%	20%	0.178	1	3600	7200	0.94	8.37
7	HP50	6	C	19	11	209	8.61	30%	30%	20%	0.221	1	3600	21600	0.94	21.49
8	HP50	1	C	19	10	190	9.16	30%	30%	20%	0.205	1	3600	3600	0.94	3.65
9	F208	2	C	19	10	190	9.16	30%	30%	20%						
	HP50	2	C	19	10	190	9.16	30%	30%	20%	0.205	1	3600	7200	0.94	7.31
10	F208	2	C	30	19	570	5.16	30%	30%	20%						
	HP50	8	C	30	19	570	5.16	30%	30%	20%	0.350	1	3600	28800	0.94	16.64
11	HP50	1	C	12	10	120	11.00	30%	30%	20%	0.178	1	3600	3600	0.94	5.02
12	HP50	1	R	11	6	66	6.44	30%	30%	20%	0.294	1	3600	3600	0.94	15.09
RS	HP50	6	R	93	5	465	5.27	30%	30%	20%	0.345	1	3600	21600	0.94	15.08
RE	HP50	5	R	50	5	250	5.50	30%	30%	20%	0.335	1	3600	18000	0.94	22.69
RW	HP50	3	R	50	5	250	5.50	30%	30%	20%	0.335	1	3600	10800	0.94	13.62
RN	HP50	6	R	93	5	465	5.27	30%	30%	20%	0.345	1	3600	21600	0.94	15.08

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1													
2	I200	14	C	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
3	F312	6	C	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76
4	I200	20	C	2496	1	700	71.3	$711	0.0	$0	6.7	$105	$816
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
5	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
6	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
7	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
8	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
9	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
10	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	12	C	2496	1	700	42.8	$427	0.0	$0	4.0	$63	$489
11	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
12	I200	1	R	2496	1	700	3.6	$36	0.0	$0	0.3	$5	$41
RS	I200	6	R	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
RE	I200	5	R	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
RW	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
RN	I200	6	R	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
Building Total		106						$3,425		$19		$567	$4,011

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1														
2	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
3	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$13
4	MH70	14	C	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	$212
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
6	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
7	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
8	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
9	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
10	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
11	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
12	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
RS	MH70	6	R	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	($14)
RE	MH70	5	R	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	($12)
RW	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
RN	MH70	6	R	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	($14)
Building Total		82						$2,217		$274		$688	$3,179	$832

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1														
2	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
3	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$13
4	HP70	14	C	2496	1	16800	2.1	$82	0.3	$52	4.7	$122	$257	$559
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
6	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
7	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
8	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
9	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
10	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
11	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
12	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
RS	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
RE	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
RW	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RN	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
Building Total		82						$457		$280		$688	$1,425	$2,586

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1														
2	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
3	F312	6	C	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$0
4	MH70	14	C	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	$212
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
5	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
6	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
7	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
8	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
9	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
10	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
11	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
12	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
RS	MH70	6	R	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	($14)
RE	MH70	5	R	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	($12)
RW	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
RN	MH70	6	R	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	($14)
Building Total		82						$2,236		$275		$688	$3,199	$811

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1														
2	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
3	F312	6	C	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$0
4	HP70	14	C	2496	1	16800	2.1	$82	0.3	$52	4.7	$122	$257	$559
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
5	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
6	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
7	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
8	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
9	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
10	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
11	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
12	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
RS	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
RE	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
RW	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RN	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
Building Total		82						$477		$281		$688	$1,446	$2,565

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-81
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1														
2	HP50	10	C	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$383
3	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$13
4	HP50	14	C	2496	1	16800	2.1	$90	0.3	$50	4.7	$122	$263	$553
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
5	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
6	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
7	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
8	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
9	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
10	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	HP50	8	C	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$339
11	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
12	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
RS	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
RE	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
RW	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RN	HP50	6	R	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$132
Building Total		82						$486		$274		$688	$1,448	$2,563

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	9	7-0	C	36	180	17	200	1.80	$231	$0	$128	I200	2	200	0.40	$1,417	I200	11	48	52	4,493	998	5,491	$1,776
	F312	3	9-0	C	38	500	46	132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
2	I200	17	7-0	C				200	3.40	$437	$0	$241	I200	4	200	0.80	$2,835	I200	21	48	52	8,486	1,997	10,483	$3,512
	F312	2	7-6	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
3	F312	3	7-6	C				132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
*	F312	2	7-6	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
4	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
5	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
6	I200	7	7-0	C	36	220	20	200	1.40	$180	$0	$99	I200	2	200	0.40	$1,417	I200	9	48	52	3,494	998	4,493	$1,696
7	I200	1	7-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
RE	I200	11	9-6	R				200	2.20	$283	$0	$156	I200	0	200	0.00	$0	I200	11	48	52	5,491	0	5,491	$439
RW	I200	8	9-6	R				200	1.60	$206	$0	$113	I200	0	200	0.00	$0	I200	8	48	52	3,994	0	3,994	$319
RN	I200	1	9-6	R				200	0.20	$26	$0	$14	I200	0	200	0.00	$0	I200	1	48	52	499	0	499	$40
RS	I200	1	9-6	R				200	0.20	$26	$0	$14	I200	0	200	0.00	$0	I200	1	48	52	499	0	499	$40
New Panel																	$1,500								$1,500
Building Total		67							12.72	$1,907	$45	$947		11		2.20	$9,296					31,749	5,491	37,240	$12,195

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	11	C	180	17	200	2.20	$1,776	MH70	9		89	0.80	$4,957	48	52	5,491	1,854	3,638	($3,181)
	F312	3	C	500	46	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	937	428	509	($1,901)
2	I200	21	C			200	4.20	$3,512	MH70	17		89	1.51	$9,363	48	52	10,483	3,501	6,982	($5,850)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	625	286	339	($1,267)
3	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	937	428	509	($1,901)
*	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	625	286	339	($1,267)
4	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	206	792	$198
5	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	206	792	$198
6	I200	9	C	220	20	200	1.80	$1,696	MH70	7		89	0.62	$3,855	48	52	4,493	1,442	3,051	($2,159)
7	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	206	792	$198
RE	I200	11	R			200	2.20	$439	MH70	11		89	0.98	$6,058	48	52	5,491	2,265	3,226	($5,620)
RW	I200	8	R			200	1.60	$319	MH70	8		89	0.71	$4,406	48	52	3,994	1,648	2,346	($4,087)
RN	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	206	293	($511)
RS	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	206	293	($511)
New Panel								$1,500												$1,500
Building Total		78					14.92	$12,195		67			5.69	$38,357			37,070	13,167	23,903	($26,162)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	11	C	180	17	200	2.20	$1,776	HP70	9		99	0.89	$5,552	48	52	5,491	2,039	3,453	($3,776)
	F312	3	C	500	46	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	937	428	509	($1,901)
2	I200	21	C			200	4.20	$3,512	HP70	17		99	1.68	$10,488	48	52	10,483	3,851	6,632	($6,975)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	625	286	339	($1,267)
3	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	937	428	509	($1,901)
*	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	625	286	339	($1,267)
4	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	227	772	$132
5	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	227	772	$132
6	I200	9	C	220	20	200	1.80	$1,696	HP70	7		99	0.69	$4,319	48	52	4,493	1,586	2,907	($2,622)
7	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	227	772	$132
RE	I200	11	R			200	2.20	$439	HP50	11		58	0.64	$6,636	48	52	5,491	1,539	3,952	($6,198)
RW	I200	8	R			200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,120	2,874	($4,508)
RN	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	140	359	($563)
RS	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	140	359	($563)
New Panel								$1,500												$1,500
Building Total		78					14.92	$12,195		67			5.40	$41,842			37,070	12,521	24,549	($29,647)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	11	C	180	17	200	2.20	$1,776	MH70	9		89	0.80	$4,957	48	52	5,491	1,999	3,492	($3,181)
	F312	3	C	500	46	132	0.40	$188	F312	0		132	0.40	$188	48	52	937	937	0	$0
2	I200	21	C			200	4.20	$3,512	MH70	17		89	1.51	$9,363	48	52	10,483	3,776	6,707	($5,850)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	625	625	0	$0
3	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	937	937	0	$0
*	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	625	625	0	$0
4	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
5	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
6	I200	9	C	220	20	200	1.80	$1,696	MH70	7		89	0.62	$3,855	48	52	4,493	1,555	2,938	($2,159)
7	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
RE	I200	11	R			200	2.20	$439	MH70	11		89	0.98	$6,058	48	52	5,491	2,444	3,048	($5,620)
RW	I200	8	R			200	1.60	$319	MH70	8		89	0.71	$4,406	48	52	3,994	1,777	2,216	($4,087)
RN	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
RS	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
New Panel								$1,500												$1,500
Building Total		78					14.92	$12,195		57			6.39	$32,020			37,070	15,787	21,283	($19,825)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	11	C	180	17	200	2.20	$1,776	HP70	9		99	0.89	$5,552	48	52	5,491	2,224	3,267	($3,776)
	F312	3	C	500	46	132	0.40	$188	F312	0		132	0.40	$188	48	52	937	937	0	$0
2	I200	21	C			200	4.20	$3,512	HP70	17		99	1.68	$10,488	48	52	10,483	4,201	6,282	($6,975)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	625	625	0	$0
3	F312	3	C			132	0.40	$188	F312	0		132	0.40	$188	48	52	937	937	0	$0
*	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	625	625	0	$0
4	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
5	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
6	I200	9	C	220	20	200	1.80	$1,696	HP70	7		99	0.69	$4,319	48	52	4,493	1,730	2,763	($2,622)
7	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
RE	I200	11	R			200	2.20	$439	HP50	11		58	0.64	$6,636	48	52	5,491	1,592	3,899	($6,198)
RW	I200	8	R			200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,158	2,835	($4,508)
RN	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
RS	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
New Panel								$1,500												$1,500
Building Total		78					14.92	$12,195		57			6.10	$35,506			37,070	15,060	22,010	($23,311)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	11	C	180	17	200	2.20	$1,776	HP50	9		58	0.52	$5,430	48	52	5,491	1,260	4,232	($3,654)
	F312	3	C	500	46	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	937	428	509	($1,901)
2	I200	21	C			200	4.20	$3,512	HP50	17		58	0.99	$10,256	48	52	10,483	2,379	8,104	($6,744)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	625	286	339	($1,267)
3	F312	3	C			132	0.40	$188	F208	3		62	0.19	$2,089	48	52	937	428	509	($1,901)
*	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	625	286	339	($1,267)
4	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	140	858	$145
5	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	140	858	$145
6	I200	9	C	220	20	200	1.80	$1,696	HP50	7		58	0.41	$4,223	48	52	4,493	980	3,513	($2,527)
7	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	140	858	$145
RE	I200	11	R			200	2.20	$439	HP50	11		58	0.64	$6,636	48	52	5,491	1,539	3,952	($6,198)
RW	I200	8	R			200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,120	2,874	($4,508)
RN	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	140	359	($563)
RS	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	140	359	($563)
New Panel								$1,500												$1,500
Building Total		78					14.92	$12,195		67			3.93	$41,352			37,070	9,405	27,665	($29,157)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	11	C	40	28	1120	3.64	30%	30%	20%	0.327	1	3400	37400	0.86	9.44
	F312	3	C	40	28	1120	3.64	30%	30%	20%						
2	I200	21	C	46	20	920	4.30	30%	30%	20%	0.295	1	3400	71400	0.86	19.79
	F312	2	C	46	20	920	4.30	30%	30%	20%						
3	F312	3	C	34	13	442	6.38	30%	30%	20%						
*	F312	2	C	34	13	442	6.38	30%	30%	20%						
4	I200	2	C	10	8	80	13.50	30%	30%	20%	0.140	1	3400	6800	0.86	10.29
5	I200	2	C	9	8	72	14.17	30%	30%	20%	0.140	1	3400	6800	0.86	11.43
6	I200	9	C	32	14	448	6.16	30%	30%	20%	0.232	1	3400	30600	0.86	13.70
7	I200	2	C	7	3	21	28.57	30%	30%	20%	0.140	1	3400	6800	0.86	39.19
RE	I200	11	R	138	8	1104	3.31	30%	30%	20%	0.345	1	3400	37400	0.86	10.10
RW	I200	8	R	138	8	1104	3.31	30%	30%	20%	0.345	1	3400	27200	0.86	7.35
RN	I200	1	R	60	8	480	3.54	30%	30%	20%	0.332	1	3400	3400	0.86	2.03
RS	I200	1	R	60	8	480	3.54	30%	30%	20%	0.332	1	3400	3400	0.86	2.03

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	9	C	40	28	1120	3.64	30%	30%	20%	0.284	1	4000	36000	0.90	8.23
	F208	3	C	40	28	1120	3.64	30%	30%	20%						
2	MH70	17	C	46	20	920	4.30	30%	30%	20%	0.254	1	4000	68000	0.90	16.94
	F208	2	C	46	20	920	4.30	30%	30%	20%						
3	F208	3	C	34	13	442	6.38	30%	30%	20%						
*	F208	2	C	34	13	442	6.38	30%	30%	20%						
4	MH70	1	C	10	8	80	13.50	30%	30%	20%	0.115	1	4000	4000	0.90	5.19
5	MH70	1	C	9	8	72	14.17	30%	30%	20%	0.115	1	4000	4000	0.90	9.77
6	MH70	7	C	32	14	448	6.16	30%	30%	20%	0.195	1	4000	28000	0.90	10.99
7	MH70	1	C	7	3	21	28.57	30%	30%	20%	0.115	1	4000	4000	0.90	19.76
RE	MH70	11	R	138	8	1104	3.31	30%	30%	20%	0.301	1	4000	44000	0.90	10.82
RW	MH70	8	R	138	8	1104	3.31	30%	30%	20%	0.301	1	4000	32000	0.90	7.87
RN	MH70	1	R	60	8	480	3.54	30%	30%	20%	0.289	1	4000	4000	0.90	2.17
RS	MH70	1	R	60	8	480	3.54	30%	30%	20%	0.289	1	4000	4000	0.90	2.17

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	9	C	40	28	1120	3.64	30%	30%	20%	0.447	1	5450	49050	0.94	18.42
	F208	3	C	40	28	1120	3.64	30%	30%	20%						
2	HP70	17	C	46	20	920	4.30	30%	30%	20%	0.400	1	5450	92650	0.94	37.90
	F208	2	C	46	20	920	4.30	30%	30%	20%						
3	F208	3	C	34	13	442	6.38	30%	30%	20%						
*	F208	2	C	34	13	442	6.38	30%	30%	20%						
4	HP70	1	C	10	8	80	13.50	30%	30%	20%	0.178	1	5450	5450	0.94	11.41
5	HP70	1	C	9	8	72	14.17	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
6	HP70	7	C	32	14	448	6.16	30%	30%	20%	0.306	1	5450	38150	0.94	24.52
7	HP70	1	C	7	3	21	28.57	30%	30%	20%	0.178	1	5450	5450	0.94	43.47
RE	HP50	11	R	138	8	1104	3.31	30%	30%	20%	0.473	1	3600	39600	0.94	15.96
RW	HP50	8	R	138	8	1104	3.31	30%	30%	20%	0.473	1	3600	28800	0.94	11.61
RN	HP50	1	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	3600	0.94	3.21
RS	HP50	1	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	3600	0.94	3.21

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 4

Loc B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	9	C	40	28	1120	3.64	30%	30%	20%	0.284	1	4000	36000	0.90	8.23
	F312	3	C	40	28	1120	3.64	30%	30%	20%						
2	MH70	17	C	46	20	920	4.30	30%	30%	20%	0.254	1	4000	68000	0.90	16.94
	F312	2	C	46	20	920	4.30	30%	30%	20%						
3	F312	3	C	34	13	442	6.38	30%	30%	20%						
*	F312	2	C	34	13	442	6.38	30%	30%	20%						
4	MH70	1	C	10	8	80	13.50	30%	30%	20%	0.115	1	4000	4000	0.90	5.19
5	MH70	1	C	9	8	72	14.17	30%	30%	20%	0.115	1	4000	4000	0.90	5.76
6	MH70	7	C	32	14	448	6.16	30%	30%	20%	0.195	1	4000	28000	0.90	10.99
7	MH70	1	C	7	3	21	28.57	30%	30%	20%	0.115	1	4000	4000	0.90	19.76
RE	MH70	11	R	138	8	1104	3.31	30%	30%	20%	0.301	1	4000	44000	0.90	10.82
RW	MH70	8	R	138	8	1104	3.31	30%	30%	20%	0.301	1	4000	32000	0.90	7.87
RN	MH70	1	R	60	8	480	3.54	30%	30%	20%	0.289	1	4000	4000	0.90	2.17
RS	MH70	1	R	60	8	480	3.54	30%	30%	20%	0.289	1	4000	4000	0.90	2.17

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	9	C	40	28	1120	3.64	30%	30%	20%	0.447	1	5450	49050	0.94	18.42
	F312	3	C	40	28	1120	3.64	30%	30%	20%						
2	HP70	17	C	46	20	920	4.30	30%	30%	20%	0.400	1	5450	92650	0.94	37.90
	F312	2	C	46	20	920	4.30	30%	30%	20%						
3	F312	3	C	34	13	442	6.38	30%	30%	20%						
*	F312	2	C	34	13	442	6.38	30%	30%	20%						
4	HP70	1	C	10	8	80	13.50	30%	30%	20%	0.178	1	5450	5450	0.94	11.41
5	HP70	1	C	9	8	72	14.17	30%	30%	20%	0.178	1	5450	5450	0.94	12.68
6	HP70	7	C	32	14	448	6.16	30%	30%	20%	0.306	1	5450	38150	0.94	24.52
7	HP70	1	C	7	3	21	28.57	30%	30%	20%	0.178	1	5450	5450	0.94	43.47
RE	HP50	11	R	138	8	1104	3.31	30%	30%	20%	0.473	1	3600	39600	0.94	15.96
RW	HP50	8	R	138	8	1104	3.31	30%	30%	20%	0.473	1	3600	28800	0.94	11.61
RN	HP50	1	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	3600	0.94	3.21
RS	HP50	1	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	3600	0.94	3.21

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	9	C	40	28	1120	3.64	30%	30%	20%	0.447	1	3600	32400	0.94	12.17
	F208	3	C	40	28	1120	3.64	30%	30%	20%						
2	HP50	17	C	46	20	920	4.30	30%	30%	20%	0.400	1	3600	61200	0.94	25.04
	F208	2	C	46	20	920	4.30	30%	30%	20%						
3	F208	3	C	34	13	442	6.38	30%	30%	20%						
*	F208	2	C	34	13	442	6.38	30%	30%	20%						
4	HP50	1	C	10	8	80	13.50	30%	30%	20%	0.178	1	3600	3600	0.94	7.54
5	HP50	1	C	9	8	72	14.17	30%	30%	20%	0.178	1	3600	3600	0.94	8.37
6	HP50	7	C	32	14	448	6.16	30%	30%	20%	0.306	1	3600	25200	0.94	16.20
7	HP50	1	C	7	3	21	28.57	30%	30%	20%	0.178	1	3600	3600	0.94	28.71
RE	HP50	11	R	138	8	1104	3.31	30%	30%	20%	0.473	1	3600	39600	0.94	15.96
RW	HP50	8	R	138	8	1104	3.31	30%	30%	20%	0.473	1	3600	28800	0.94	11.61
RN	HP50	1	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	3600	0.94	3.21
RS	HP50	1	R	60	8	480	3.54	30%	30%	20%	0.455	1	3600	3600	0.94	3.21

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	11	C	2496	1	700	39.2	$391	0.0	$0	3.7	$58	$449
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
2	I200	21	C	2496	1	700	74.9	$747	0.0	$0	7.0	$110	$857
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
3	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
*	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
4	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
5	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
6	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
7	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
RE	I200	11	R	2496	1	700	39.2	$391	0.0	$0	3.7	$58	$449
RW	I200	8	R	2496	1	700	28.5	$284	0.0	$0	2.7	$42	$326
RN	I200	1	R	2496	1	700	3.6	$36	0.0	$0	0.3	$5	$41
RS	I200	1	R	2496	1	700	3.6	$36	0.0	$0	0.3	$5	$41
Building Total		78						$2,463		$18		$419	$2,900

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$60
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
2	MH70	17	C	2496	1	5250	8.1	$524	0.3	$61	5.7	$148	$734	$123
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
3	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
*	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
4	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
5	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
6	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$65
7	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
RE	MH70	11	R	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	($26)
RW	MH70	8	R	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($19)
RN	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
RS	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$284
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
2	HP70	17	C	2496	1	16800	2.5	$100	0.3	$63	5.7	$148	$311	$545
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
3	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
*	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
4	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
5	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
6	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$239
7	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
RE	HP50	11	R	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$242
RW	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
RN	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
RS	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
Building Total		67						$372		$226		$560	$1,158	$1,742

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$60
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
2	MH70	17	C	2496	1	5250	8.1	$524	0.3	$61	5.7	$148	$734	$123
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
3	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
*	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
4	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
5	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
6	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$65
7	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
RE	MH70	11	R	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	($26)
RW	MH70	8	R	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($19)
RN	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
RS	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
Building Total		67						$1,803		$223		$560	$2,586	$314

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$284
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
2	HP70	17	C	2496	1	16800	2.5	$100	0.3	$63	5.7	$148	$311	$545
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
3	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
*	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
4	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
5	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
6	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$239
7	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
RE	HP50	11	R	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$242
RW	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
RN	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
RS	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
Building Total		67						$393		$228		$560	$1,180	$1,720

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-111
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$280
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
2	HP50	17	C	2496	1	16800	2.5	$110	0.3	$61	5.7	$148	$319	$537
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
3	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
*	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
4	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
5	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
6	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$236
7	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
RE	HP50	11	R	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$242
RW	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
RN	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
RS	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
Building Total		67						$393		$222		$560	$1,174	$1,725

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IX-36

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
Building H-115-1																									
1	I200	1		C	38	260	24	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	I200	29		C	36	440	41	200	5.80	$745	$0	$411	I200	12	200	2.40	$8,504	I200	41	48	52	14,477	5,990	20,467	$9,660
	I200	1		C	30	230	21	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	I200	18		C	36	360	33	200	3.60	$462	$0	$255	I200	8	200	1.60	$5,670	I200	26	48	52	8,986	3,994	12,979	$6,387
	I200	18		C				200	3.60	$462	$0	$255	I200	8	200	1.60	$5,670	I200	26	48	52	8,986	3,994	12,979	$6,387
	F212	3		C				82	0.25	$112	$11	$44	F212	0	82	0.00	$0	F212	3	48	52	614	0	614	$167
	I200	1		C	38	425	39	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
2	I200	2		C	36	163	15	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
3	I200	4		C	36	830	77	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	1		C	41	650	60	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
	F312	1		C	38	280	26	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
R1	I200	3		R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
R2	I200	9		R				200	1.80	$231	$0	$128	I200	0	200	0.00	$0	I200	9	48	52	4,493	0	4,493	$359
R3	I200	5		R				200	1.00	$128	$0	$71	I200	0	200	0.00	$0	I200	5	48	52	2,496	0	2,496	$199
RC	I200	3		R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
Building H-115-3																									
1	I200	3		R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
2	F312	1	9-0	C	38	85	8	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
3	I200	1		C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
4	I200	1		C	48	120	11	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
5	F312	1		C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
6	I200	1		C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
7	I200	3		R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
8	I200	4		R				200	0.80	$103	$0	$57	I200	0	200	0.00	$0	I200	4	48	52	1,997	0	1,997	$159
9	F212	4		C	36	520	48	82	0.33	$149	$14	$59	F212	0	82	0.00	$0	F212	4	48	52	819	0	819	$223
	I200	10		C	36	240	22	200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
	I200	3	15-0	C	36	240	22	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
New Panel																	$1,500								$1,500
Building Total		131							25.10	$3,521	$43	$1,860		43		8.60	$31,974		174			62,655	21,466	84,120	$37,399

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
Building H-115-1																				
1	I200	2	C	260	24	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	41	C	440	41	200	8.20	$9,660	MH70	29		89	2.58	$15,972	48	52	20,467	6,442	14,025	($6,312)
	I200	2	C	230	21	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	26	C	360	33	200	5.20	$6,387	MH70	18		89	1.60	$9,914	48	52	12,979	3,999	8,981	($3,527)
	I200	26	C			200	5.20	$6,387	MH70	18		89	1.60	$9,914	48	52	12,979	3,999	8,981	($3,527)
	F212	3	C			82	0.25	$167	F208	3		62	0.19	$2,089	48	52	614	464	150	($1,922)
	I200	2	C	425	39	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
2	I200	3	C	163	15	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	6	C	830	77	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	1	C	650	60	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	1	C	280	26	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
R1	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
R2	I200	9	R			200	1.80	$359	MH70	9		89	0.80	$4,957	48	52	4,493	1,999	2,494	($4,598)
R3	I200	5	R			200	1.00	$199	MH70	5		89	0.45	$2,754	48	52	2,496	1,111	1,385	($2,554)
RC	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
Building H-115-3																				
1	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
2	F312	1	C	85	8	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
3	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
4	I200	2	C	120	11	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
5	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
6	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
7	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
8	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
9	F212	4	C	520	48	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
	I200	14	C	240	22	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
	I200	5	C	240	22	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
New Panel								$1,500												$1,500
Building Total		174					33.70	$37,399		131			11.36	$73,751			84,120	28,360	55,761	($36,352)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
Building H-115-1																				
1	I200	2	C	260	24	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	41	C	440	41	200	8.20	$9,660	HP70	29		99	2.87	$17,891	48	52	20,467	7,166	13,301	($8,231)
	I200	2	C	230	21	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	26	C	360	33	200	5.20	$6,387	HP70	18		99	1.78	$11,105	48	52	12,979	4,448	8,531	($4,718)
	I200	26	C			200	5.20	$6,387	HP70	18		99	1.78	$11,105	48	52	12,979	4,448	8,531	($4,718)
	F212	3	C			82	0.25	$167	F208	3		62	0.19	$2,089	48	52	614	464	150	($1,922)
	I200	2	C	425	39	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
2	I200	3	C	163	15	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	6	C	830	77	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	1	C	650	60	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	1	C	280	26	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
R1	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
R2	I200	9	R			200	1.80	$359	HP50	9		58	0.52	$5,430	48	52	4,493	1,303	3,190	($5,071)
R3	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
RC	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Building H-115-3																				
1	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
2	F312	1	C	85	8	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
3	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
4	I200	2	C	120	11	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
5	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
6	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
7	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
8	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
9	F212	4	C	520	48	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
	I200	14	C	240	22	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
	I200	5	C	240	22	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
New Panel								$1,500												$1,500
Building Total		174					33.70	$37,399		131			11.33	$81,283			84,120	28,285	55,836	($43,884)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
Building H-115-1																				
1	I200	2	C	260	24	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	41	C	440	41	200	8.20	$9,660	MH70	29		89	2.58	$15,972	48	52	20,467	6,442	14,025	($6,312)
	I200	2	C	230	21	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	I200	26	C	360	33	200	5.20	$6,387	MH70	18		89	1.60	$9,914	48	52	12,979	3,999	8,981	($3,527)
	I200	26	C			200	5.20	$6,387	MH70	18		89	1.60	$9,914	48	52	12,979	3,999	8,981	($3,527)
	F212	3	C			82	0.25	$167	F212	0		82	0.25	$167	48	52	614	614	0	$0
	I200	2	C	425	39	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
2	I200	3	C	163	15	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	6	C	830	77	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	1	C	650	60	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	F312	1	C	280	26	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
R1	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
R2	I200	9	R			200	1.80	$359	MH70	9		89	0.80	$4,957	48	52	4,493	1,999	2,494	($4,598)
R3	I200	5	R			200	1.00	$199	MH70	5		89	0.45	$2,754	48	52	2,496	1,111	1,385	($2,554)
RC	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
Building H-115-3																				
1	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
2	F312	1	C	85	8	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
3	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
4	I200	2	C	120	11	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
5	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
6	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
7	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
8	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
9	F212	4	C	520	48	82	0.33	$223	F212	0		82	0.33	$223	48	52	819	819	0	$0
	I200	14	C	240	22	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
	I200	5	C	240	22	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
New Panel								$1,500												$1,500
Building Total		174					33.70	$37,399		120			11.78	$66,732			84,120	29,408	54,712	($29,333)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
Building H-115-1																				
1	I200	2	C	260	24	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	41	C	440	41	200	8.20	$9,660	HP70	29		99	2.87	$17,891	48	52	20,467	7,166	13,301	($8,231)
	I200	2	C	230	21	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	I200	26	C	360	33	200	5.20	$6,387	HP70	18		99	1.78	$11,105	48	52	12,979	4,448	8,531	($4,718)
	I200	26	C			200	5.20	$6,387	HP70	18		99	1.78	$11,105	48	52	12,979	4,448	8,531	($4,718)
	F212	3	C			82	0.25	$167	F212	0		82	0.25	$167	48	52	614	614	0	$0
	I200	2	C	425	39	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
2	I200	3	C	163	15	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	6	C	830	77	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	1	C	650	60	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	F312	1	C	280	26	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
R1	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
R2	I200	9	R			200	1.80	$359	HP50	9		58	0.52	$5,430	48	52	4,493	1,303	3,190	($5,071)
R3	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
RC	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Building H-115-3																				
1	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
2	F312	1	C	85	8	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
3	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
4	I200	2	C	120	11	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
5	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
6	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
7	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
8	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
9	F212	4	C	520	48	82	0.33	$223	F212	0		82	0.33	$223	48	52	819	819	0	$0
	I200	14	C	240	22	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
	I200	5	C	240	22	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
New Panel								$1,500												$1,500
Building Total		174					33.70	$37,399		120			11.75	$74,264			84,120	29,333	54,787	($36,865)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
Building H-115-1																				
1	I200	2	C	260	24	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	I200	41	C	440	41	200	8.20	$9,660	HP50	29		58	1.68	$17,496	48	52	20,467	4,198	16,269	($7,836)
	I200	2	C	230	21	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	I200	26	C	360	33	200	5.20	$6,387	HP50	18		58	1.04	$10,860	48	52	12,979	2,606	10,373	($4,472)
	I200	26	C			200	5.20	$6,387	HP50	18		58	1.04	$10,860	48	52	12,979	2,606	10,373	($4,472)
	F212	3	C			82	0.25	$167	F208	3		62	0.19	$2,089	48	52	614	464	150	($1,922)
	I200	2	C	425	39	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
2	I200	3	C	163	15	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
3	I200	6	C	830	77	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F312	1	C	650	60	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F312	1	C	280	26	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
R1	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
R2	I200	9	R			200	1.80	$359	HP50	9		58	0.52	$5,430	48	52	4,493	1,303	3,190	($5,071)
R3	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
RC	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Building H-115-3																				
1	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
2	F312	1	C	85	8	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
3	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
4	I200	2	C	120	11	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
5	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
6	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
7	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
8	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
9	F212	4	C	520	48	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
	I200	14	C	240	22	200	2.80	$3,233	HP50	10		58	0.58	$6,033	48	52	6,989	1,448	5,541	($2,800)
	I200	5	C	240	22	200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
New Panel								$1,500												$1,500
Building Total		174					33.70	$37,399		131			7.64	$80,057			84,120	19,074	65,046	($42,658)

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11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
Building H-115-1																
1	I200	2	C	80	28	2240	2.89	30%	30%	20%	0.368	1	3400	6800	0.86	0.97
	I200	41	C	80	28	2240	2.89	30%	30%	20%	0.368	1	3400	139400	0.86	19.80
	I200	2	C	80	28	2240	2.89	30%	30%	20%	0.368	1	3400	6800	0.86	0.97
	I200	26	C	80	28	2240	2.89	30%	30%	20%	0.368	1	3400	88400	0.86	12.56
	I200	26	C	80	28	2240	2.89	30%	30%	20%	0.368	1	3400	88400	0.86	12.56
	F212	3	C	80	28	2240	2.89	30%	30%	20%						
	I200	2	C	80	28	2240	2.89	30%	30%	20%	0.368	1	3400	6800	0.86	0.97
2	I200	3	C	15	11	165	9.45	30%	30%	20%	0.153	1	3400	10200	0.86	8.18
3	I200	6	C	44	8	352	8.86	30%	30%	20%	0.167	1	3400	20400	0.86	8.37
	F312	1	C	44	8	352	8.86	30%	30%	20%						
	F312	1	C	44	8	352	8.86	30%	30%	20%						
R1	I200	3	R	30	8	240	3.96	30%	30%	20%	0.310	1	3400	10200	0.86	11.39
R2	I200	9	R	80	8	640	3.44	30%	30%	20%	0.338	1	3400	30600	0.86	13.97
R3	I200	5	R	22	8	176	4.26	30%	30%	20%	0.297	1	3400	17000	0.86	24.80
RC	I200	3	R	135	8	1080	3.31	30%	30%	20%	0.345	1	3400	10200	0.86	2.82
Building H-115-3																
1	I200	3	R	35	5	175	5.71	30%	30%	20%	0.245	1	3400	10200	0.86	12.35
2	F312	1	C	20	9	180	9.67	30%	30%	20%						
3	I200	2	C	11	9.5	105	11.77	30%	30%	20%	0.140	1	3400	6800	0.86	7.88
4	I200	2	C	9	8.5	77	13.73	30%	30%	20%	0.140	1	3400	6800	0.86	10.76
5	F312	1	C	9	8.5	77	13.73	30%	30%	20%						
6	I200	2	C	12	9	108	11.67	30%	30%	20%	0.140	1	3400	6800	0.86	7.62
7	I200	3	R	47	5	235	5.53	30%	30%	20%	0.250	1	3400	10200	0.86	9.38
8	I200	4	R	11	5	55	7.27	30%	30%	20%	0.201	1	3400	13600	0.86	42.97
9	F212	4	C	79	28.5	2252	2.86	30%	30%	20%						
	I200	14	C	79	28.5	2252	2.86	30%	30%	20%	0.370	1	3400	47600	0.86	6.76
	I200	5	C	79	28.5	2252	2.86	30%	30%	20%	0.370	1	3400	17000	0.86	2.42

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
Building H-115-1																
1	MH70	1	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	4000	0.90	0.52
	MH70	29	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	116000	0.90	15.14
	MH70	1	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	4000	0.90	0.52
	MH70	18	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	72000	0.90	9.39
	MH70	18	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	72000	0.90	9.39
	F208	3	C	80	28	2240	2.89	30%	30%	20%						
	MH70	1	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	4000	0.90	0.52
2	MH70	2	C	15	11	165	9.45	30%	30%	20%	0.127	1	4000	8000	0.90	5.55
3	MH70	4	C	44	8	352	8.86	30%	30%	20%	0.138	1	4000	16000	0.90	5.66
	F208	1	C	44	8	352	8.86	30%	30%	20%						
	F208	1	C	44	8	352	8.86	30%	30%	20%						
R1	MH70	3	R	30	8	240	3.96	30%	30%	20%	0.268	1	4000	12000	0.90	12.09
R2	MH70	9	R	80	8	640	3.44	30%	30%	20%	0.295	1	4000	36000	0.90	14.97
R3	MH70	5	R	22	8	176	4.26	30%	30%	20%	0.256	1	4000	20000	0.90	26.24
RC	MH70	3	R	135	8	1080	3.31	30%	30%	20%	0.301	1	4000	12000	0.90	3.02
Building H-115-3																
1	MH70	3	R	35	5	175	5.71	30%	30%	20%	0.207	1	4000	12000	0.90	12.80
2	F208	1	C	20	9	180	9.67	30%	30%	20%						
3	MH70	1	C	11	9.5	105	11.77	30%	30%	20%	0.115	1	4000	4000	0.90	3.97
4	MH70	1	C	9	8.5	77	13.73	30%	30%	20%	0.115	1	4000	4000	0.90	5.42
5	F208	1	C	9	8.5	77	13.73	30%	30%	20%						
6	MH70	1	C	12	9	108	11.67	30%	30%	20%	0.115	1	4000	4000	0.90	3.84
7	MH70	3	R	47	5	235	5.53	30%	30%	20%	0.212	1	4000	12000	0.90	9.77
8	MH70	4	R	11	5	55	7.27	30%	30%	20%	0.168	1	4000	16000	0.90	44.09
9	F208	4	C	79	28.5	2252	2.86	30%	30%	20%						
	MH70	10	C	79	28.5	2252	2.86	30%	30%	20%	0.326	1	4000	40000	0.90	5.22
	MH70	3	C	79	28.5	2252	2.86	30%	30%	20%	0.326	1	4000	12000	0.90	1.57

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
Building H-115-1																
1	HP70	1	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	5450	0.94	1.16
	HP70	29	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	158050	0.94	33.66
	HP70	1	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	5450	0.94	1.16
	HP70	18	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	98100	0.94	20.89
	HP70	18	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	98100	0.94	20.89
	F208	3	C	80	28	2240	2.89	30%	30%	20%						
	HP70	1	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	5450	0.94	1.16
2	HP70	2	C	15	11	165	9.45	30%	30%	20%	0.178	1	5450	10900	0.94	11.06
3	HP70	4	C	44	8	352	8.86	30%	30%	20%	0.214	1	5450	21800	0.94	12.47
	F208	1	C	44	8	352	8.86	30%	30%	20%						
	F208	1	C	44	8	352	8.86	30%	30%	20%						
R1	HP50	3	R	30	8	240	3.96	30%	30%	20%	0.422	1	3600	10800	0.94	17.87
R2	HP50	9	R	80	8	640	3.44	30%	30%	20%	0.463	1	3600	32400	0.94	22.05
R3	HP50	5	R	22	8	176	4.26	30%	30%	20%	0.403	1	3600	18000	0.94	38.78
RC	HP50	3	R	135	8	1080	3.31	30%	30%	20%	0.473	1	3600	10800	0.94	4.45
Building H-115-3																
1	HP50	3	R	35	5	175	5.71	30%	30%	20%	0.325	1	3600	10800	0.94	18.87
2	F208	1	C	20	9	180	9.67	30%	30%	20%						
3	HP70	1	C	11	9.5	105	11.77	30%	30%	20%	0.178	1	5450	5450	0.94	8.73
4	HP70	1	C	9	8.5	77	13.73	30%	30%	20%	0.178	1	5450	5450	0.94	11.93
5	F208	1	C	9	8.5	77	13.73	30%	30%	20%						
6	HP70	1	C	12	9	108	11.67	30%	30%	20%	0.178	1	5450	5450	0.94	8.45
7	HP50	3	R	47	5	235	5.53	30%	30%	20%	0.333	1	3600	10800	0.94	14.40
8	HP50	4	R	11	5	55	7.27	30%	30%	20%	0.263	1	3600	14400	0.94	64.79
9	F208	4	C	79	28.5	2252	2.86	30%	30%	20%						
	HP70	10	C	79	28.5	2252	2.86	30%	30%	20%	0.510	1	5450	54500	0.94	11.62
	HP70	3	C	79	28.5	2252	2.86	30%	30%	20%	0.510	1	5450	16350	0.94	3.48

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
Building H-115-1																
1	MH70	1	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	4000	0.90	0.52
	MH70	29	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	116000	0.90	15.14
	MH70	1	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	4000	0.90	0.52
	MH70	18	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	72000	0.90	9.39
	MH70	18	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	72000	0.90	9.39
	F212	3	C	80	28	2240	2.89	30%	30%	20%						
	MH70	1	C	80	28	2240	2.89	30%	30%	20%	0.324	1	4000	4000	0.90	0.52
2	MH70	2	C	15	11	165	9.45	30%	30%	20%	0.127	1	4000	8000	0.90	5.55
3	MH70	4	C	44	8	352	8.86	30%	30%	20%	0.138	1	4000	16000	0.90	5.66
	F312	1	C	44	8	352	8.86	30%	30%	20%						
	F312	1	C	44	8	352	8.86	30%	30%	20%						
R1	MH70	3	R	30	8	240	3.96	30%	30%	20%	0.268	1	4000	12000	0.90	12.09
R2	MH70	9	R	80	8	640	3.44	30%	30%	20%	0.295	1	4000	36000	0.90	14.97
R3	MH70	5	R	22	8	176	4.26	30%	30%	20%	0.256	1	4000	20000	0.90	26.24
RC	MH70	3	R	135	8	1080	3.31	30%	30%	20%	0.301	1	4000	12000	0.90	3.02
Building H-115-3																
1	MH70	3	R	35	5	175	5.71	30%	30%	20%	0.207	1	4000	12000	0.90	12.80
2	F312	1	C	20	9	180	9.67	30%	30%	20%						
3	MH70	1	C	11	9.5	105	11.77	30%	30%	20%	0.115	1	4000	4000	0.90	3.97
4	MH70	1	C	9	8.5	77	13.73	30%	30%	20%	0.115	1	4000	4000	0.90	5.42
5	F312	1	C	9	8.5	77	13.73	30%	30%	20%						
6	MH70	1	C	12	9	108	11.67	30%	30%	20%	0.115	1	4000	4000	0.90	3.84
7	MH70	3	R	47	5	235	5.53	30%	30%	20%	0.212	1	4000	12000	0.90	9.77
8	MH70	4	R	11	5	55	7.27	30%	30%	20%	0.168	1	4000	16000	0.90	44.09
9	F212	4	C	79	28.5	2252	2.86	30%	30%	20%						
	MH70	10	C	79	28.5	2252	2.86	30%	30%	20%	0.326	1	4000	40000	0.90	5.22
	MH70	3	C	79	28.5	2252	2.86	30%	30%	20%	0.326	1	4000	12000	0.90	1.57

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
Building H-115-1																
1	HP70	1	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	5450	0.94	1.16
	HP70	29	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	158050	0.94	33.66
	HP70	1	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	5450	0.94	1.16
	HP70	18	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	98100	0.94	20.89
	HP70	18	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	98100	0.94	20.89
	F212	3	C	80	28	2240	2.89	30%	30%	20%						
	HP70	1	C	80	28	2240	2.89	30%	30%	20%	0.507	1	5450	5450	0.94	1.16
2	HP70	2	C	15	11	165	9.45	30%	30%	20%	0.178	1	5450	10900	0.94	11.06
3	HP70	4	C	44	8	352	8.86	30%	30%	20%	0.214	1	5450	21800	0.94	12.47
	F312	1	C	44	8	352	8.86	30%	30%	20%						
	F312	1	C	44	8	352	8.86	30%	30%	20%						
R1	HP50	3	R	30	8	240	3.96	30%	30%	20%	0.422	1	3600	10800	0.94	17.87
R2	HP50	9	R	80	8	640	3.44	30%	30%	20%	0.463	1	3600	32400	0.94	22.05
R3	HP50	5	R	22	8	176	4.26	30%	30%	20%	0.403	1	3600	18000	0.94	38.78
RC	HP50	3	R	135	8	1080	3.31	30%	30%	20%	0.473	1	3600	10800	0.94	4.45
Building H-115-3																
1	HP50	3	R	35	5	175	5.71	30%	30%	20%	0.325	1	3600	10800	0.94	18.87
2	F312	1	C	20	9	180	9.67	30%	30%	20%						
3	HP70	1	C	11	9.5	105	11.77	30%	30%	20%	0.178	1	5450	5450	0.94	8.73
4	HP70	1	C	9	8.5	77	13.73	30%	30%	20%	0.178	1	5450	5450	0.94	11.93
5	F312	1	C	9	8.5	77	13.73	30%	30%	20%						
6	HP70	1	C	12	9	108	11.67	30%	30%	20%	0.178	1	5450	5450	0.94	8.45
7	HP50	3	R	47	5	235	5.53	30%	30%	20%	0.333	1	3600	10800	0.94	14.40
8	HP50	4	R	11	5	55	7.27	30%	30%	20%	0.263	1	3600	14400	0.94	64.79
9	F212	4	C	79	28.5	2252	2.86	30%	30%	20%						
	HP70	10	C	79	28.5	2252	2.86	30%	30%	20%	0.510	1	5450	54500	0.94	11.62
	HP70	3	C	79	28.5	2252	2.86	30%	30%	20%	0.510	1	5450	16350	0.94	3.48

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
Building H-115-1																
1	HP50	1	C	80	28	2240	2.89	30%	30%	20%	0.507	1	3600	3600	0.94	0.77
	HP50	29	C	80	28	2240	2.89	30%	30%	20%	0.507	1	3600	104400	0.94	22.23
	HP50	1	C	80	28	2240	2.89	30%	30%	20%	0.507	1	3600	3600	0.94	0.77
	HP50	18	C	80	28	2240	2.89	30%	30%	20%	0.507	1	3600	64800	0.94	13.80
	HP50	18	C	80	28	2240	2.89	30%	30%	20%	0.507	1	3600	64800	0.94	13.80
	F208	3	C	80	28	2240	2.89	30%	30%	20%						
	HP50	1	C	80	28	2240	2.89	30%	30%	20%	0.507	1	3600	3600	0.94	0.77
2	HP50	2	C	15	11	165	9.45	30%	30%	20%	0.196	1	3600	7200	0.94	8.05
3	HP50	4	C	44	8	352	8.86	30%	30%	20%	0.214	1	3600	14400	0.94	8.24
	F208	1	C	44	8	352	8.86	30%	30%	20%						
	F208	1	C	44	8	352	8.86	30%	30%	20%						
R1	HP50	3	R	30	8	240	3.96	30%	30%	20%	0.422	1	3600	10800	0.94	17.87
R2	HP50	9	R	80	8	640	3.44	30%	30%	20%	0.463	1	3600	32400	0.94	22.05
R3	HP50	5	R	22	8	176	4.26	30%	30%	20%	0.403	1	3600	18000	0.94	38.78
RC	HP50	3	R	135	8	1080	3.31	30%	30%	20%	0.473	1	3600	10800	0.94	4.45
Building H-115-3																
1	HP50	3	R	35	5	175	5.71	30%	30%	20%	0.325	1	3600	10800	0.94	18.87
2	F208	1	C	20	9	180	9.67	30%	30%	20%						
3	HP50	1	C	11	9.5	105	11.77	30%	30%	20%	0.178	1	3600	3600	0.94	5.77
4	HP50	1	C	9	8.5	77	13.73	30%	30%	20%	0.178	1	3600	3600	0.94	7.88
5	F208	1	C	9	8.5	77	13.73	30%	30%	20%						
6	HP50	1	C	12	9	108	11.67	30%	30%	20%	0.178	1	3600	3600	0.94	5.58
7	HP50	3	R	47	5	235	5.53	30%	30%	20%	0.333	1	3600	10800	0.94	14.40
8	HP50	4	R	11	5	55	7.27	30%	30%	20%	0.263	1	3600	14400	0.94	64.79
9	F208	4	C	79	28.5	2252	2.86	30%	30%	20%						
	HP50	10	C	79	28.5	2252	2.86	30%	30%	20%	0.510	1	3600	36000	0.94	7.67
	HP50	3	C	79	28.5	2252	2.86	30%	30%	20%	0.510	1	3600	10800	0.94	2.30

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
Building H-115-1													
1	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	I200	41	C	2496	1	700	146.2	$1,458	0.0	$0	13.7	$215	$1,672
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	I200	26	C	2496	1	700	92.7	$924	0.0	$0	8.7	$136	$1,061
	I200	26	C	2496	1	700	92.7	$924	0.0	$0	8.7	$136	$1,061
	F212	3	C	2496	2	14000	0.5	$10	0.1	$4	1.0	$19	$33
	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
2	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
3	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
R1	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
R2	I200	9	R	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
R3	I200	5	R	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
RC	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
Building H-115-3													
1	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
2	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
3	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
4	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
5	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
6	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
7	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
8	I200	4	R	2496	1	700	14.3	$142	0.0	$0	1.3	$21	$163
9	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44
	I200	14	C	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
Building Total		174						$5,836		$17		$923	$6,776

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
Building H-115-1														
1	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	29	C	2496	1	5250	13.8	$894	0.6	$104	9.7	$253	$1,251	$421
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	18	C	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	$284
	MH70	18	C	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	$284
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$2
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
R1	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
R2	MH70	9	R	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	($21)
R3	MH70	5	R	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	($12)
RC	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Building H-115-3														
1	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
2	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
3	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
4	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
5	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
6	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
7	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
8	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
9	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
Building Total		131						$3,727		$450		$1,116	$5,293	$1,483

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
Building H-115-1														
1	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	29	C	2496	1	16800	4.3	$171	0.6	$108	9.7	$253	$531	$1,141
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	18	C	2496	1	16800	2.7	$106	0.4	$67	6.0	$157	$330	$731
	HP70	18	C	2496	1	16800	2.7	$106	0.4	$67	6.0	$157	$330	$731
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$2
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
R1	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
R2	HP50	9	R	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$198
R3	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
RC	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Building H-115-3														
1	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
2	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
3	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
4	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
5	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
6	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
7	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
8	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
9	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
Building Total		131						$751		$461		$1,116	$2,327	$4,449

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
Building H-115-1														
1	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	29	C	2496	1	16800	4.3	$171	0.6	$108	9.7	$253	$531	$1,141
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	18	C	2496	1	16800	2.7	$106	0.4	$67	6.0	$157	$330	$731
	HP70	18	C	2496	1	16800	2.7	$106	0.4	$67	6.0	$157	$330	$731
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$2
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
R1	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
R2	HP50	9	R	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$198
R3	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
RC	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Building H-115-3														
1	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
2	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
3	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
4	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
5	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
6	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
7	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
8	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
9	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
Building Total		131						$751		$461		$1,116	$2,327	$4,449

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
Building H-115-1														
1	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	29	C	2496	1	5250	13.8	$894	0.6	$104	9.7	$253	$1,251	$421
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	MH70	18	C	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	$284
	MH70	18	C	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	$284
	F212	3	C	2496	2	14000	0.5	$10	0.1	$4	1.0	$19	$33	$0
	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
R1	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
R2	MH70	9	R	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	($21)
R3	MH70	5	R	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	($12)
RC	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Building H-115-3														
1	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
2	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
3	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
4	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
5	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
6	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
7	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
8	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
9	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44	$0
	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
Building Total		131						$3,741		$449		$1,116	$5,306	$1,471

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
Building H-115-1														
1	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	29	C	2496	1	16800	4.3	$171	0.6	$108	9.7	$253	$531	$1,141
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	HP70	18	C	2496	1	16800	2.7	$106	0.4	$67	6.0	$157	$330	$731
	HP70	18	C	2496	1	16800	2.7	$106	0.4	$67	6.0	$157	$330	$731
	F212	3	C	2496	2	14000	0.5	$10	0.1	$4	1.0	$19	$33	$0
	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
R1	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
R2	HP50	9	R	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$198
R3	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
RC	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Building H-115-3														
1	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
2	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
3	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
4	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
5	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
6	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
7	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
8	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
9	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44	$0
	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
Building Total		131						$764		$460		$1,116	$2,340	$4,436

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line H
Building H-115-1,2,3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
Building H-115-1														
1	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	HP50	29	C	2496	1	16800	4.3	$187	0.6	$104	9.7	$253	$544	$1,128
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	HP50	18	C	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$723
	HP50	18	C	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$723
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$2
	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
2	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
3	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
R1	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
R2	HP50	9	R	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$198
R3	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
RC	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Building H-115-3														
1	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
2	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
3	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
4	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
5	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
6	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
7	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
8	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
9	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
	HP50	10	C	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$383
	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
Building Total		131						$802		$450		$1,116	$2,368	$4,409

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures											Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	1	6-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
1A	I200	1	6-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
2A	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F312	1	9-7	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
2B	I200	10	8-0	C	30	230	21	200	2.00	$257	$0	$142	I200	2	200	0.40	$1,417	I200	12	48	52	4,992	998	5,990	$1,816
	F312	7	8-10	C	30	444	41	132	0.92	$310	$32	$97	F312	0	132	0.00	$0	F312	7	48	52	2,306	0	2,306	$439
2C	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
2D	F312	1	9-7	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
	F212	2	9-7	C				82	0.16	$75	$7	$30	F212	0	82	0.00	$0	F212	2	48	52	409	0	409	$111
2E	I200	2	8-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
3	I200	5	9-0	C	32	126	12	200	1.00	$128	$0	$71	I200	1	200	0.20	$709	I200	6	48	52	2,496	499	2,995	$908
4	F212	2	9-0	C	32	490	46	82	0.16	$75	$7	$30	F212	0	82	0.00	$0	F212	2	48	52	409	0	409	$111
5	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
NL	I200	2	8-0	L				200	0.40	$51	$0	$28	I200	0	200	0.00	$0	I200	2	48	52	998	0	998	$80
EL	I200	1	8-0	L				200	0.20	$26	$0	$14	I200	0	200	0.00	$0	I200	1	48	52	499	0	499	$40
NR	I200	5	9-0	R				200	1.00	$128	$0	$71	I200	0	200	0.00	$0	I200	5	48	52	2,496	0	2,496	$199
ER	I200	3	9-0	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
New Panel																	$1,500								$1,500
Building Total		46							8.12	$1,396	$55	$652		9		1.80	$7,878		55			20,258	4,493	24,750	$9,981

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
1A	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
2A	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
2B	I200	12	C	230	21	200	2.40	$1,816	MH70	10		89	0.89	$5,508	48	52	5,990	2,221	3,769	($3,692)
	F312	7	C	444	41	132	0.92	$439	F208	7		62	0.43	$4,874	48	52	2,306	1,083	1,223	($4,435)
2C	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
2D	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F212	2	C			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
2E	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	6	C	126	12	200	1.20	$908	MH70	5		89	0.45	$2,754	48	52	2,995	1,111	1,884	($1,846)
4	F212	2	C	490	46	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
5	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
NL	I200	2	L			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
EL	I200	1	L			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
NR	I200	5	R			200	1.00	$199	MH70	5		89	0.45	$2,754	48	52	2,496	1,111	1,385	($2,554)
ER	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
New Panel								$1,500												$1,500
Building Total		55					9.92	$9,981		46			3.74	$27,228			24,750	9,343	15,408	($17,247)

X-2

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
1A	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
2A	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
2B	I200	12	C	230	21	200	2.40	$1,816	HP70	10		99	0.99	$6,169	48	52	5,990	2,471	3,519	($4,353)
	F312	7	C	444	41	132	0.92	$439	F208	7		62	0.43	$4,874	48	52	2,306	1,083	1,223	($4,435)
2C	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
2D	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F212	2	C			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
2E	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	6	C	126	12	200	1.20	$908	HP70	5		99	0.50	$3,085	48	52	2,995	1,236	1,760	($2,177)
4	F212	2	C	490	46	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
5	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
NL	I200	2	L			200	0.40	$80	HP70	2		99	0.20	$1,234	48	52	998	494	504	($1,154)
EL	I200	1	L			200	0.20	$40	HP70	1		99	0.10	$617	48	52	499	247	252	($577)
NR	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
ER	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
New Panel								$1,500												$1,500
Building Total		55					9.92	$9,981		46			3.75	$29,302			24,750	9,348	15,403	($19,321)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
1A	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
2A	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
2B	I200	12	C	230	21	200	2.40	$1,816	MH70	10		89	0.89	$5,508	48	52	5,990	2,221	3,769	($3,692)
	F312	7	C	444	41	132	0.92	$439	F312	0		132	0.92	$439	48	52	2,306	2,306	0	$0
2C	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
2D	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	F212	2	C			82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
2E	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	6	C	126	12	200	1.20	$908	MH70	5		89	0.45	$2,754	48	52	2,995	1,111	1,884	($1,846)
4	F212	2	C	490	46	82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
5	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
NL	I200	2	L			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
EL	I200	1	L			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
NR	I200	5	R			200	1.00	$199	MH70	5		89	0.45	$2,754	48	52	2,496	1,111	1,385	($2,554)
ER	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
New Panel								$1,500												$1,500
Building Total		55					9.92	$9,981		33			4.45	$18,962			24,750	11,115	13,636	($8,981)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
1A	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
2A	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
2B	I200	12	C	230	21	200	2.40	$1,816	HP70	10		99	0.99	$6,169	48	52	5,990	2,471	3,519	($4,353)
	F312	7	C	444	41	132	0.92	$439	F312	0		132	0.92	$439	48	52	2,306	2,306	0	$0
2C	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
2D	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	F212	2	C			82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
2E	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	6	C	126	12	200	1.20	$908	HP70	5		99	0.50	$3,085	48	52	2,995	1,236	1,760	($2,177)
4	F212	2	C	490	46	82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
5	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
NL	I200	2	L			200	0.40	$80	HP70	2		99	0.20	$1,234	48	52	998	494	504	($1,154)
EL	I200	1	L			200	0.20	$40	HP70	1		99	0.10	$617	48	52	499	247	252	($577)
NR	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
ER	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
New Panel								$1,500												$1,500
Building Total		55					9.92	$9,981		33			4.46	$21,037			24,750	11,120	13,631	($11,056)

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X-5

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
1A	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
2A	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
2B	I200	12	C	230	21	200	2.40	$1,816	HP50	10		58	0.58	$6,033	48	52	5,990	1,448	4,543	($4,217)
	F312	7	C	444	41	132	0.92	$439	F208	7		62	0.43	$4,874	48	52	2,306	1,083	1,223	($4,435)
2C	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
2D	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	F212	2	C			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
2E	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
3	I200	6	C	126	12	200	1.20	$908	HP50	5		58	0.29	$3,017	48	52	2,995	724	2,271	($2,109)
4	F212	2	C	490	46	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
5	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
NL	I200	2	L			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
EL	I200	1	L			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
NR	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
ER	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
New Panel								$1,500												$1,500
Building Total		55					9.92	$9,981		46			2.72	$28,962			24,750	6,789	17,961	($18,981)

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X-6

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	2	C	7	5	35	20.57	30%	30%	20%	0.140	1	3400	6800	0.86	23.51
1A	I200	2	C	3	5	15	32.00	30%	30%	20%	0.140	1	3400	6800	0.86	54.87
2A	I200	2	C	25	15	375	6.40	30%	30%	20%	0.225	1	3400	6800	0.86	3.53
	F312	1	C	25	15	375	6.40	30%	30%	20%						
2B	I200	12	C	63	24	1512	3.45	30%	30%	20%	0.337	1	3400	40800	0.86	7.86
	F312	7	C	63	24	1512	3.45	30%	30%	20%						
2C	I200	2	C	11	8	88	12.95	30%	30%	20%	0.140	1	3400	6800	0.86	9.35
2D	F312	1	C	28	11	308	7.60	30%	30%	20%						
	F212	2	C	28	11	308	7.60	30%	30%	20%						
2E	I200	3	C	15	6.5	98	13.23	30%	30%	20%	0.140	1	3400	10200	0.86	12.66
3	I200	6	C	44	8	352	8.86	30%	30%	20%	0.167	1	3400	20400	0.86	8.37
4	F212	2	C	10	8	80	13.50	30%	30%	20%						
5	I200	2	C	19	14	266	7.44	30%	30%	20%	0.197	1	3400	6800	0.86	4.35
NL	I200	2	L	68	8	544	3.49	30%	30%	20%	0.335	1	3400	6800	0.86	3.62
EL	I200	1	L	59	8	472	3.55	30%	30%	20%	0.332	1	3400	3400	0.86	2.07
NR	I200	5	R	68	8	544	3.49	30%	30%	20%	0.335	1	3400	17000	0.86	9.05
ER	I200	3	R	59	8	472	3.55	30%	30%	20%	0.332	1	3400	10200	0.86	6.20

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	1	C	7	5	35	20.57	30%	30%	20%	0.115	1	4000	4000	0.90	11.86
1A	MH70	1	C	3	5	15	32.00	30%	30%	20%	0.115	1	4000	4000	0.90	27.66
2A	MH70	1	C	25	15	375	6.40	30%	30%	20%	0.189	1	4000	4000	0.90	1.82
	F208	1	C	25	15	375	6.40	30%	30%	20%						
2B	MH70	10	C	63	24	1512	3.45	30%	30%	20%	0.294	1	4000	40000	0.90	7.02
	F208	7	C	63	24	1512	3.45	30%	30%	20%						
2C	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
2D	F208	1	C	28	11	308	7.60	30%	30%	20%						
	F208	2	C	28	11	308	7.60	30%	30%	20%						
2E	MH70	2	C	15	6.5	98	13.23	30%	30%	20%	0.115	1	4000	8000	0.90	8.51
3	MH70	5	C	44	8	352	8.86	30%	30%	20%	0.138	1	4000	20000	0.90	7.07
4	F208	2	C	10	8	80	13.50	30%	30%	20%						
5	MH70	1	C	19	14	266	7.44	30%	30%	20%	0.164	1	4000	4000	0.90	2.22
NL	MH70	2	L	68	8	544	3.49	30%	30%	20%	0.259	1	4000	8000	0.90	3.44
EL	MH70	1	L	59	8	472	3.55	30%	30%	20%	0.289	1	4000	4000	0.90	2.21
NR	MH70	5	R	68	8	544	3.49	30%	30%	20%	0.259	1	4000	20000	0.90	8.60
ER	MH70	3	R	59	8	472	3.55	30%	30%	20%	0.289	1	4000	12000	0.90	6.63

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	1	C	7	5	35	20.57	30%	30%	20%	0.178	1	5450	5450	0.94	26.08
1A	HP70	1	C	3	5	15	32.00	30%	30%	20%	0.178	1	5450	5450	0.94	60.85
2A	HP70	1	C	25	15	375	6.40	30%	30%	20%	0.296	1	5450	5450	0.94	4.05
	F208	1	C	25	15	375	6.40	30%	30%	20%						
2B	HP70	10	C	63	24	1512	3.45	30%	30%	20%	0.462	1	5450	54500	0.94	15.67
	F208	7	C	63	24	1512	3.45	30%	30%	20%						
2C	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
2D	F208	1	C	28	11	308	7.60	30%	30%	20%						
	F208	2	C	28	11	308	7.60	30%	30%	20%						
2E	HP70	2	C	15	6.5	98	13.23	30%	30%	20%	0.178	1	5450	10900	0.94	18.72
3	HP70	5	C	44	8	352	8.86	30%	30%	20%	0.214	1	5450	27250	0.94	15.59
4	F208	2	C	10	8	80	13.50	30%	30%	20%						
5	HP70	1	C	19	14	266	7.44	30%	30%	20%	0.257	1	5450	5450	0.94	4.95
NL	HP70	2	L	68	8	544	3.49	30%	30%	20%	0.459	1	5450	10900	0.94	8.65
EL	HP70	1	L	59	8	472	3.55	30%	30%	20%	0.454	1	5450	5450	0.94	4.93
NR	HP50	5	R	68	8	544	3.49	30%	30%	20%	0.459	1	3600	18000	0.94	14.29
ER	HP50	3	R	59	8	472	3.55	30%	30%	20%	0.454	1	3600	10800	0.94	9.77

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	1	C	7	5	35	20.57	30%	30%	20%	0.115	1	4000	4000	0.90	11.86
1A	MH70	1	C	3	5	15	32.00	30%	30%	20%	0.115	1	4000	4000	0.90	27.66
2A	MH70	1	C	25	15	375	6.40	30%	30%	20%	0.189	1	4000	4000	0.90	1.82
	F312	1	C	25	15	375	6.40	30%	30%	20%						
2B	MH70	10	C	63	24	1512	3.45	30%	30%	20%	0.294	1	4000	40000	0.90	7.02
	F312	7	C	63	24	1512	3.45	30%	30%	20%						
2C	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
2D	F312	1	C	28	11	308	7.60	30%	30%	20%						
	F212	2	C	28	11	308	7.60	30%	30%	20%						
2E	MH70	2	C	15	6.5	98	13.23	30%	30%	20%	0.115	1	4000	8000	0.90	8.51
3	MH70	5	C	44	8	352	8.86	30%	30%	20%	0.138	1	4000	20000	0.90	7.07
4	F212	2	C	10	8	80	13.50	30%	30%	20%						
5	MH70	1	C	19	14	266	7.44	30%	30%	20%	0.164	1	4000	4000	0.90	2.22
NL	MH70	2	L	68	8	544	3.49	30%	30%	20%	0.259	1	4000	8000	0.90	3.44
EL	MH70	1	L	59	8	472	3.55	30%	30%	20%	0.289	1	4000	4000	0.90	2.21
NR	MH70	5	R	68	8	544	3.49	30%	30%	20%	0.259	1	4000	20000	0.90	8.60
ER	MH70	3	R	59	8	472	3.55	30%	30%	20%	0.289	1	4000	12000	0.90	6.63

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	1	C	7	5	35	20.57	30%	30%	20%	0.178	1	5450	5450	0.94	26.08
1A	HP70	1	C	3	5	15	32.00	30%	30%	20%	0.178	1	5450	5450	0.94	60.85
2A	HP70	1	C	25	15	375	6.40	30%	30%	20%	0.296	1	5450	5450	0.94	4.05
	F312	1	C	25	15	375	6.40	30%	30%	20%						
2B	HP70	10	C	63	24	1512	3.45	30%	30%	20%	0.462	1	5450	54500	0.94	15.67
	F312	7	C	63	24	1512	3.45	30%	30%	20%						
2C	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
2D	F312	1	C	28	11	308	7.60	30%	30%	20%						
	F212	2	C	28	11	308	7.60	30%	30%	20%						
2E	HP70	2	C	15	6.5	98	13.23	30%	30%	20%	0.178	1	5450	10900	0.94	18.72
3	HP70	5	C	44	8	352	8.86	30%	30%	20%	0.214	1	5450	27250	0.94	15.59
4	F212	2	C	10	8	80	13.50	30%	30%	20%						
5	HP70	1	C	19	14	266	7.44	30%	30%	20%	0.257	1	5450	5450	0.94	4.95
NL	HP70	2	L	68	8	544	3.49	30%	30%	20%	0.459	1	5450	10900	0.94	8.65
EL	HP70	1	L	59	8	472	3.55	30%	30%	20%	0.454	1	5450	5450	0.94	4.93
NR	HP50	5	R	68	8	544	3.49	30%	30%	20%	0.459	1	3600	18000	0.94	14.29
ER	HP50	3	R	59	8	472	3.55	30%	30%	20%	0.454	1	3600	10800	0.94	9.77

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	1	C	7	5	35	20.57	30%	30%	20%	0.178	1	3600	3600	0.94	17.23
1A	HP50	1	C	3	5	15	32.00	30%	30%	20%	0.178	1	3600	3600	0.94	40.20
2A	HP50	1	C	25	15	375	6.40	30%	30%	20%	0.296	1	3600	3600	0.94	2.67
	F208	1	C	25	15	375	6.40	30%	30%	20%						
2B	HP50	10	C	63	24	1512	3.45	30%	30%	20%	0.462	1	3600	36000	0.94	10.35
	F208	7	C	63	24	1512	3.45	30%	30%	20%						
2C	HP50	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	3600	3600	0.94	6.85
2D	F208	1	C	28	11	308	7.60	30%	30%	20%						
	F208	2	C	28	11	308	7.60	30%	30%	20%						
2E	HP50	2	C	15	6.5	98	13.23	30%	30%	20%	0.178	1	3600	7200	0.94	12.37
3	HP50	5	C	44	8	352	8.86	30%	30%	20%	0.214	1	3600	18000	0.94	10.30
4	F208	2	C	10	8	80	13.50	30%	30%	20%						
5	HP50	1	C	19	14	266	7.44	30%	30%	20%	0.257	1	3600	3600	0.94	3.27
NL	HP50	2	L	68	8	544	3.49	30%	30%	20%	0.459	1	3600	7200	0.94	5.72
EL	HP50	1	L	59	8	472	3.55	30%	30%	20%	0.454	1	3600	3600	0.94	3.26
NR	HP50	5	R	68	8	544	3.49	30%	30%	20%	0.459	1	3600	18000	0.94	14.29
ER	HP50	3	R	59	8	472	3.55	30%	30%	20%	0.454	1	3600	10800	0.94	9.77

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
1A	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
2A	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
2B	I200	12	C	2496	1	700	42.8	$427	0.0	$0	4.0	$63	$489
	F312	7	C	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88
2C	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
2D	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
2E	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
3	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
4	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
5	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
NL	I200	2	L	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
EL	I200	1	L	2496	1	700	3.6	$36	0.0	$0	0.3	$5	$41
NR	I200	5	R	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
ER	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
Building Total		55						$1,547		$22		$302	$1,871

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
1A	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2A	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
2B	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$58
	F208	7	C	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$15
2C	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2D	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
2E	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$29
4	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
5	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
NL	MH70	2	L	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
EL	MH70	1	L	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
NR	MH70	5	R	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	($12)
ER	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Building Total		46						$1,050		$140		$369	$1,560	$311

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
1A	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2A	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
2B	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$306
	F208	7	C	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$15
2C	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2D	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
2E	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$153
4	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
5	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
NL	HP70	2	L	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$45
EL	HP70	1	L	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$22
NR	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
ER	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Building Total		46						$231		$143		$369	$744	$1,127

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
1A	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2A	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
2B	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$58
	F312	7	C	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$0
2C	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
2D	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
2E	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$29
4	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
5	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
NL	MH70	2	L	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
EL	MH70	1	L	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
NR	MH70	5	R	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	($12)
ER	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Building Total		46						$1,071		$141		$369	$1,582	$289

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
1A	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2A	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
2B	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$306
	F312	7	C	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$0
2C	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
2D	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
2E	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$153
4	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
5	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
NL	HP70	2	L	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$45
EL	HP70	1	L	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$22
NR	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
ER	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Building Total		46						$253		$144		$369	$766	$1,105

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-1
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
1A	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
2A	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
2B	HP50	10	C	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$302
	F208	7	C	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$15
2C	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
2D	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
2E	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
3	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$151
4	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
5	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
NL	HP50	2	L	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
EL	HP50	1	L	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
NR	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
ER	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Building Total		46						$246		$140		$369	$755	$1,116

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X-18

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	5	9-0	C				200	1.00	$128	$0	$71	I200	1	200	0.20	$709	I200	6	48	52	2,496	499	2,995	$908
2	I200	17	9-0	C	31	240	22	200	3.40	$437	$0	$241	I200	4	200	0.80	$2,835	I200	21	48	52	8,486	1,997	10,483	$3,512
	F212	4	7-6	C	31	240	22	82	0.33	$149	$14	$59	F212	0	82	0.00	$0	F212	4	48	52	819	0	819	$223
NR	I200	3	7-3	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
RC1	I200	13	9-0	R				200	2.60	$334	$0	$184	I200	0	200	0.00	$0	I200	13	48	52	6,490	0	6,490	$518
RC2	I200	7	9-0	R				200	1.40	$180	$0	$99	I200	0	200	0.00	$0	I200	7	48	52	3,494	0	3,494	$279
	I200	1		L				200	0.20	$26	$0	$14	I200	0	200	0.00	$0	I200	1	48	52	499	0	499	$40
New Panel																	$1,500								$1,500
Building Total		50							9.53	$1,331	$14	$711		5		1.00	$5,044					23,782	2,496	26,278	$7,100

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	6	C			200	1.20	$908	MH70	5		89	0.45	$2,754	48	52	2,995	1,111	1,884	($1,846)
2	I200	21	C	240	22	200	4.20	$3,512	MH70	17		89	1.51	$9,363	48	52	10,483	3,776	6,707	($5,850)
	F212	4	C	240	22	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
NR	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
RC1	I200	13	R			200	2.60	$518	MH70	13		89	1.16	$7,160	48	52	6,490	2,888	3,602	($6,642)
RC2	I200	7	R			200	1.40	$279	MH70	7		89	0.62	$3,855	48	52	3,494	1,555	1,939	($3,576)
	I200	1	L			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
New Panel								$1,500												$1,500
Building Total		55					10.53	$7,100		50			4.34	$28,120			26,278	10,838	15,440	($21,020)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	6	C			200	1.20	$908	HP70	5		99	0.50	$3,085	48	52	2,995	1,236	1,760	($2,177)
2	I200	21	C	240	22	200	4.20	$3,512	HP70	17		99	1.68	$10,488	48	52	10,483	4,201	6,282	($6,975)
	F212	4	C	240	22	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
NR	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
RC1	I200	13	R			200	2.60	$518	HP50	13		58	0.75	$7,843	48	52	6,490	1,882	4,608	($7,325)
RC2	I200	7	R			200	1.40	$279	HP50	7		58	0.41	$4,223	48	52	3,494	1,013	2,481	($3,944)
	I200	1	L			200	0.20	$40	HP70	1		99	0.10	$617	48	52	499	247	252	($577)
New Panel								$1,500												$1,500
Building Total		55					10.53	$7,100		50			3.86	$30,851			26,278	9,632	16,646	($23,751)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	6	C			200	1.20	$908	MH70	5		89	0.45	$2,754	48	52	2,995	1,111	1,884	($1,846)
2	I200	21	C	240	22	200	4.20	$3,512	MH70	17		89	1.51	$9,363	48	52	10,483	3,776	6,707	($5,850)
	F212	4	C	240	22	82	0.33	$223	F212	0		82	0.33	$223	48	52	819	819	0	$0
NR	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
RC1	I200	13	R			200	2.60	$518	MH70	13		89	1.16	$7,160	48	52	6,490	2,888	3,602	($6,642)
RC2	I200	7	R			200	1.40	$279	MH70	7		89	0.62	$3,855	48	52	3,494	1,555	1,939	($3,576)
	I200	1	L			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
New Panel								$1,500												$1,500
Building Total		55					10.53	$7,100		46			4.42	$25,558			26,278	11,037	15,241	($18,458)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	6	C			200	1.20	$908	HP70	5		99	0.50	$3,085	48	52	2,995	1,236	1,760	($2,177)
2	I200	21	C	240	22	200	4.20	$3,512	HP70	17		99	1.68	$10,488	48	52	10,483	4,201	6,282	($6,975)
	F212	4	C	240	22	82	0.33	$223	F212	0		82	0.33	$223	48	52	819	819	0	$0
NR	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
RC1	I200	13	R			200	2.60	$518	HP50	13		58	0.75	$7,843	48	52	6,490	1,882	4,608	($7,325)
RC2	I200	7	R			200	1.40	$279	HP50	7		58	0.41	$4,223	48	52	3,494	1,013	2,481	($3,944)
	I200	1	L			200	0.20	$40	HP70	1		99	0.10	$617	48	52	499	247	252	($577)
New Panel								$1,500												$1,500
Building Total		55					10.53	$7,100		46			3.94	$28,288			26,278	9,832	16,446	($21,188)

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	6	C			200	1.20	$908	HP50	5		58	0.29	$3,017	48	52	2,995	724	2,271	($2,109)
2	I200	21	C	240	22	200	4.20	$3,512	HP50	17		58	0.99	$10,256	48	52	10,483	2,461	8,022	($6,744)
	F212	4	C	240	22	82	0.33	$223	F208	4		62	0.25	$2,785	48	52	819	619	200	($2,563)
NR	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
RC1	I200	13	R			200	2.60	$518	HP50	13		58	0.75	$7,843	48	52	6,490	1,882	4,608	($7,325)
RC2	I200	7	R			200	1.40	$279	HP50	7		58	0.41	$4,223	48	52	3,494	1,013	2,481	($3,944)
	I200	1	L			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
New Panel								$1,500												$1,500
Building Total		55					10.53	$7,100		50			2.92	$30,538			26,278	7,278	19,000	($23,438)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	6	C	47	10	470	7.28	30%	30%	20%	0.201	1	3400	20400	0.86	7.54
2	I200	21	C	47	43	2021	2.67	30%	30%	20%	0.382	1	3400	71400	0.86	11.67
	F212	4	C	47	43	2021	2.67	30%	30%	20%						
NR	I200	3	R	52	8	416	3.61	30%	30%	20%	0.329	1	3400	10200	0.86	6.97
RC1	I200	13	R	257	8	2056	3.22	30%	30%	20%	0.349	1	3400	44200	0.86	6.49
RC2	I200	7	R	160	8	1280	3.28	30%	30%	20%	0.346	1	3400	23800	0.86	5.56
	I200	1	L	160	8	1280	3.28	30%	30%	20%	0.346	1	3400	3400	0.86	0.79

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	5	C	47	10	470	7.28	30%	30%	20%	0.168	1	4000	20000	0.90	6.45
2	MH70	17	C	47	43	2021	2.67	30%	30%	20%	0.338	1	4000	68000	0.90	10.26
	F208	4	C	47	43	2021	2.67	30%	30%	20%						
NR	MH70	3	R	52	8	416	3.61	30%	30%	20%	0.286	1	4000	12000	0.90	7.44
RC1	MH70	13	R	257	8	2056	3.22	30%	30%	20%	0.306	1	4000	52000	0.90	6.98
RC2	MH70	7	R	160	8	1280	3.28	30%	30%	20%	0.303	1	4000	28000	0.90	5.98
	MH70	1	L	160	8	1280	3.28	30%	30%	20%	0.303	1	4000	4000	0.90	0.85

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	5	C	47	10	470	7.28	30%	30%	20%	0.262	1	5450	27250	0.94	14.29
2	HP70	17	C	47	43	2021	2.67	30%	30%	20%	0.528	1	5450	92650	0.94	22.77
	F208	4	C	47	43	2021	2.67	30%	30%	20%						
NR	HP50	3	R	52	8	416	3.61	30%	30%	20%	0.449	1	3600	10800	0.94	10.97
RC1	HP50	13	R	257	8	2056	3.22	30%	30%	20%	0.480	1	3600	46800	0.94	10.28
RC2	HP50	7	R	160	8	1280	3.28	30%	30%	20%	0.475	1	3600	25200	0.94	8.80
	HP70	1	L	160	8	1280	3.28	30%	30%	20%	0.475	1	5450	5450	0.94	1.90

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	5	C	47	10	470	7.28	30%	30%	20%	0.168	1	4000	20000	0.90	6.45
2	MH70	17	C	47	43	2021	2.67	30%	30%	20%	0.338	1	4000	68000	0.90	10.26
	F212	4	C	47	43	2021	2.67	30%	30%	20%						
NR	MH70	3	R	52	8	416	3.61	30%	30%	20%	0.286	1	4000	12000	0.90	7.44
RC1	MH70	13	R	257	8	2056	3.22	30%	30%	20%	0.306	1	4000	52000	0.90	6.98
RC2	MH70	7	R	160	8	1280	3.28	30%	30%	20%	0.303	1	4000	28000	0.90	5.98
	MH70	1	L	160	8	1280	3.28	30%	30%	20%	0.303	1	4000	4000	0.90	0.85

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	5	C	47	10	470	7.28	30%	30%	20%	0.262	1	5450	27250	0.94	14.29
2	HP70	17	C	47	43	2021	2.67	30%	30%	20%	0.528	1	5450	92650	0.94	22.77
	F212	4	C	47	43	2021	2.67	30%	30%	20%						
NR	HP50	3	R	52	8	416	3.61	30%	30%	20%	0.449	1	3600	10800	0.94	10.97
RC1	HP50	13	R	257	8	2056	3.22	30%	30%	20%	0.480	1	3600	46800	0.94	10.28
RC2	HP50	7	R	160	8	1280	3.28	30%	30%	20%	0.475	1	3600	25200	0.94	8.80
	HP70	1	L	160	8	1280	3.28	30%	30%	20%	0.475	1	5450	5450	0.94	1.90

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	5	C	47	10	470	7.28	30%	30%	20%	0.262	1	3600	18000	0.94	9.44
2	HP50	17	C	47	43	2021	2.67	30%	30%	20%	0.528	1	3600	61200	0.94	15.04
	F208	4	C	47	43	2021	2.67	30%	30%	20%						
NR	HP50	3	R	52	8	416	3.61	30%	30%	20%	0.449	1	3600	10800	0.94	10.97
RC1	HP50	13	R	257	8	2056	3.22	30%	30%	20%	0.480	1	3600	46800	0.94	10.28
RC2	HP50	7	R	160	8	1280	3.28	30%	30%	20%	0.475	1	3600	25200	0.94	8.80
	HP50	1	L	160	8	1280	3.28	30%	30%	20%	0.475	1	3600	3600	0.94	1.26

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
2	I200	21	C	2496	1	700	74.9	$747	0.0	$0	7.0	$110	$857
	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44
NR	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
RC1	I200	13	R	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
RC2	I200	7	R	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	I200	1	L	2496	1	700	3.6	$36	0.0	$0	0.3	$5	$41
Building Total		55						$1,826		$6		$292	$2,124

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$29
2	MH70	17	C	2496	1	5250	8.1	$524	0.3	$61	5.7	$148	$734	$123
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
NR	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
RC1	MH70	13	R	2496	1	5250	6.2	$401	0.3	$47	4.3	$113	$561	($31)
RC2	MH70	7	R	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	($17)
	MH70	1	L	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
Building Total		50						$1,428		$172		$426	$2,027	$98

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$153
2	HP70	17	C	2496	1	16800	2.5	$100	0.3	$63	5.7	$148	$311	$545
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
NR	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RC1	HP50	13	R	2496	1	16800	1.9	$84	0.3	$47	4.3	$113	$244	$286
RC2	HP50	7	R	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$154
	HP70	1	L	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$22
Building Total		50						$294		$175		$426	$895	$1,229

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$29
2	MH70	17	C	2496	1	5250	8.1	$524	0.3	$61	5.7	$148	$734	$123
	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44	$0
NR	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
RC1	MH70	13	R	2496	1	5250	6.2	$401	0.3	$47	4.3	$113	$561	($31)
RC2	MH70	7	R	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	($17)
	MH70	1	L	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
Building Total		50						$1,431		$171		$426	$2,029	$95

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$153
2	HP70	17	C	2496	1	16800	2.5	$100	0.3	$63	5.7	$148	$311	$545
	F212	4	C	2496	2	14000	0.7	$13	0.1	$6	1.3	$25	$44	$0
NR	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RC1	HP50	13	R	2496	1	16800	1.9	$84	0.3	$47	4.3	$113	$244	$286
RC2	HP50	7	R	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$154
	HP70	1	L	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$22
Building Total		50						$297		$174		$426	$897	$1,227

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-3
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$151
2	HP50	17	C	2496	1	16800	2.5	$110	0.3	$61	5.7	$148	$319	$537
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$2
NR	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
RC1	HP50	13	R	2496	1	16800	1.9	$84	0.3	$47	4.3	$113	$244	$286
RC2	HP50	7	R	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$154
	HP50	1	L	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
Building Total		50						$307		$172		$426	$905	$1,219

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	45	9-0	C	32	300	28	200	9.00	$1,156	$0	$638	I200	9	200	1.80	$6,378	I200	54	48	52	22,464	4,493	26,957	$8,172
	F212	6	9-0	C				82	0.49	$224	$22	$89	F212	0	82	0.00	$0	F212	6	48	52	1,228	0	1,228	$334
	F312	12	9-0	C	32	390	36	132	1.58	$531	$54	$167	F312	0	132	0.00	$0	F312	12	48	52	3,954	0	3,954	$753
2	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
3	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
4	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
5	I200	2	9-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
6	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
7	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
New Panel																	$1,500								$1,500
Building Total		71							12.68	$2,117	$76	$1,007		15		3.00	$12,131					31,639	7,488	39,127	$15,330

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	54	C	300	28	200	10.80	$8,172	MH70	45		89	4.01	$24,784	48	52	26,957	9,996	16,960	($16,612)
	F212	6	C			82	0.49	$334	F208	6		62	0.37	$4,178	48	52	1,228	929	300	($3,844)
	F312	12	C	390	36	132	1.58	$753	F208	12		62	0.74	$8,356	48	52	3,954	1,857	2,097	($7,604)
2	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
4	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
5	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
6	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
7	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
New Panel								$1,500												$1,500
Building Total		86					15.68	$15,330		71			5.83	$41,725			39,127	14,559	24,568	($26,394)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	54	C	300	28	200	10.80	$8,172	HP70	45		99	4.46	$27,762	48	52	26,957	11,120	15,837	($19,590)
	F212	6	C			82	0.49	$334	F208	6		62	0.37	$4,178	48	52	1,228	929	300	($3,844)
	F312	12	C	390	36	132	1.58	$753	F208	12		62	0.74	$8,356	48	52	3,954	1,857	2,097	($7,604)
2	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
4	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
5	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
6	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
7	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
New Panel								$1,500												$1,500
Building Total		86					15.68	$15,330		71			6.36	$45,232			39,127	15,882	23,245	($29,901)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	54	C	300	28	200	10.80	$8,172	MH70	45		89	4.01	$24,784	48	52	26,957	9,996	16,960	($16,612)
	F212	6	C			82	0.49	$334	F212	0		82	0.49	$334	48	52	1,228	1,228	0	$0
	F312	12	C	390	36	132	1.58	$753	F312	0		132	1.58	$753	48	52	3,954	3,954	0	$0
2	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
3	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
4	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
5	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
6	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
7	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
New Panel								$1,500												$1,500
Building Total		86					15.68	$15,330		53			6.79	$30,277			39,127	16,955	22,172	($14,947)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	54	C	300	28	200	10.80	$8,172	HP70	45		99	4.46	$27,762	48	52	26,957	11,120	15,837	($19,590)
	F212	6	C			82	0.49	$334	F212	0		82	0.49	$334	48	52	1,228	1,228	0	$0
	F312	12	C	390	36	132	1.58	$753	F312	0		132	1.58	$753	48	52	3,954	3,954	0	$0
2	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
3	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
4	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
5	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
6	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
7	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
New Panel								$1,500												$1,500
Building Total		86					15.68	$15,330		53			7.32	$33,784			39,127	18,278	20,849	($18,454)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	54	C	300	28	200	10.80	$8,172	HP50	45		58	2.61	$27,149	48	52	26,957	6,515	20,442	($18,977)
	F212	6	C			82	0.49	$334	F208	6		62	0.37	$4,178	48	52	1,228	929	300	($3,844)
	F312	12	C	390	36	132	1.58	$753	F208	12		62	0.74	$8,356	48	52	3,954	1,857	2,097	($7,604)
2	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
3	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
4	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
5	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
6	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
7	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
New Panel								$1,500												$1,500
Building Total		86					15.68	$15,330		71			4.19	$44,510			39,127	10,458	28,669	($29,180)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	54	C	89	52	4628	1.83	30%	30%	20%	0.442	1	3400	183600	0.86	15.16
	F212	6	C	89	52	4628	1.83	30%	30%	20%						
	F312	12	C	89	52	4628	1.83	30%	30%	20%						
2	I200	3	C	22	12	264	7.73	30%	30%	20%	0.190	1	3400	10200	0.86	6.35
3	I200	2	C	12	11	132	10.45	30%	30%	20%	0.140	1	3400	6800	0.86	6.23
4	I200	2	C	12	4	48	20.00	30%	30%	20%	0.140	1	3400	6800	0.86	17.15
5	I200	3	C	24	12	288	7.50	30%	30%	20%	0.196	1	3400	10200	0.86	6.00
6	I200	2	C	10	4	40	21.00	30%	30%	20%	0.140	1	3400	6800	0.86	20.58
7	I200	2	C	10	5	50	18.00	30%	30%	20%	0.140	1	3400	6800	0.86	16.46

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	45	C	89	52	4628	1.83	30%	30%	20%	0.398	1	4000	180000	0.90	13.96
	F208	6	C	89	52	4628	1.83	30%	30%	20%						
	F208	12	C	89	52	4628	1.83	30%	30%	20%						
2	MH70	2	C	22	12	264	7.73	30%	30%	20%	0.158	1	4000	8000	0.90	4.32
3	MH70	1	C	12	11	132	10.45	30%	30%	20%	0.115	1	4000	4000	0.90	3.14
4	MH70	1	C	12	4	48	20.00	30%	30%	20%	0.115	1	4000	4000	0.90	8.65
5	MH70	2	C	24	12	288	7.50	30%	30%	20%	0.163	1	4000	8000	0.90	4.08
6	MH70	1	C	10	4	40	21.00	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
7	MH70	1	C	10	5	50	18.00	30%	30%	20%	0.115	1	4000	4000	0.90	8.30

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	45	C	89	52	4628	1.83	30%	30%	20%	0.611	1	5450	245250	0.94	30.46
	F208	6	C	89	52	4628	1.83	30%	30%	20%						
	F208	12	C	89	52	4628	1.83	30%	30%	20%						
2	HP70	2	C	22	12	264	7.73	30%	30%	20%	0.246	1	5450	10900	0.94	9.56
3	HP70	1	C	12	11	132	10.45	30%	30%	20%	0.178	1	5450	5450	0.94	6.91
4	HP70	1	C	12	4	48	20.00	30%	30%	20%	0.178	1	5450	5450	0.94	19.02
5	HP70	2	C	24	12	288	7.50	30%	30%	20%	0.255	1	5450	10900	0.94	9.08
6	HP70	1	C	10	4	40	21.00	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
7	HP70	1	C	10	5	50	18.00	30%	30%	20%	0.178	1	5450	5450	0.94	18.26

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	L o c	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	45	C	89	52	4628	1.83	30%	30%	20%	0.398	1	4000	180000	0.90	13.96
	F212	6	C	89	52	4628	1.83	30%	30%	20%						
	F312	12	C	89	52	4628	1.83	30%	30%	20%						
2	MH70	2	C	22	12	264	7.73	30%	30%	20%	0.158	1	4000	8000	0.90	4.32
3	MH70	1	C	12	11	132	10.45	30%	30%	20%	0.115	1	4000	4000	0.90	3.14
4	MH70	1	C	12	4	48	20.00	30%	30%	20%	0.115	1	4000	4000	0.90	8.65
5	MH70	2	C	24	12	288	7.50	30%	30%	20%	0.163	1	4000	8000	0.90	4.08
6	MH70	1	C	10	4	40	21.00	30%	30%	20%	0.115	1	4000	4000	0.90	10.37
7	MH70	1	C	10	5	50	18.00	30%	30%	20%	0.115	1	4000	4000	0.90	8.30

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	45	C	89	52	4628	1.83	30%	30%	20%	0.611	1	5450	245250	0.94	30.46
	F212	6	C	89	52	4628	1.83	30%	30%	20%						
	F312	12	C	89	52	4628	1.83	30%	30%	20%						
2	HP70	2	C	22	12	264	7.73	30%	30%	20%	0.246	1	5450	10900	0.94	9.56
3	HP70	1	C	12	11	132	10.45	30%	30%	20%	0.178	1	5450	5450	0.94	6.91
4	HP70	1	C	12	4	48	20.00	30%	30%	20%	0.178	1	5450	5450	0.94	19.02
5	HP70	2	C	24	12	288	7.50	30%	30%	20%	0.255	1	5450	10900	0.94	9.08
6	HP70	1	C	10	4	40	21.00	30%	30%	20%	0.178	1	5450	5450	0.94	22.82
7	HP70	1	C	10	5	50	18.00	30%	30%	20%	0.178	1	5450	5450	0.94	18.26

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	45	C	89	52	4628	1.83	30%	30%	20%	0.611	1	3600	162000	0.94	20.12
	F208	6	C	89	52	4628	1.83	30%	30%	20%						
	F208	12	C	89	52	4628	1.83	30%	30%	20%						
2	HP50	2	C	22	12	264	7.73	30%	30%	20%	0.246	1	3600	7200	0.94	6.31
3	HP50	1	C	12	11	132	10.45	30%	30%	20%	0.178	1	3600	3600	0.94	4.57
4	HP50	1	C	12	4	48	20.00	30%	30%	20%	0.178	1	3600	3600	0.94	12.56
5	HP50	2	C	24	12	288	7.50	30%	30%	20%	0.255	1	3600	7200	0.94	6.00
6	HP50	1	C	10	4	40	21.00	30%	30%	20%	0.178	1	3600	3600	0.94	15.07
7	HP50	1	C	10	5	50	18.00	30%	30%	20%	0.178	1	3600	3600	0.94	12.06

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	54	C	2496	1	700	192.5	$1,920	0.0	$0	18.0	$283	$2,203
	F212	6	C	2496	2	14000	1.1	$20	0.1	$9	2.0	$38	$66
	F312	12	C	2496	3	14000	2.1	$54	0.2	$22	4.0	$75	$151
2	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
3	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
4	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
5	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
6	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
7	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
Building Total		86						$2,492		$30		$469	$2,991

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	45	C	2496	1	5250	21.4	$1,387	0.9	$162	15.0	$392	$1,942	$261
	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$4
	F208	12	C	2496	2	14000	2.1	$30	0.2	$20	4.0	$75	$125	$26
2	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
4	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
5	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
6	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
7	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Building Total		71						$1,679		$220		$575	$2,475	$516

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X-50

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	45	C	2496	1	16800	6.7	$265	0.9	$167	15.0	$392	$825	$1,378
	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$4
	F208	12	C	2496	2	14000	2.1	$30	0.2	$20	4.0	$75	$125	$26
2	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
4	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
5	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
6	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
7	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
Building Total		71						$357		$227		$575	$1,159	$1,832

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	45	C	2496	1	5250	21.4	$1,387	0.9	$162	15.0	$392	$1,942	$261
	F212	6	C	2496	2	14000	1.1	$20	0.1	$9	2.0	$38	$66	$0
	F312	12	C	2496	3	14000	2.1	$54	0.2	$22	4.0	$75	$151	$0
2	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
3	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
4	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
5	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
6	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
7	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Building Total		71						$1,708		$221		$575	$2,505	$487

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	45	C	2496	1	16800	6.7	$265	0.9	$167	15.0	$392	$825	$1,378
	F212	6	C	2496	2	14000	1.1	$20	0.1	$9	2.0	$38	$66	$0
	F312	12	C	2496	3	14000	2.1	$54	0.2	$22	4.0	$75	$151	$0
2	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
3	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
4	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
5	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
6	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
7	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
Buliding Total		71						$386		$227		$575	$1,189	$1,803

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line O
Building O-4
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	45	C	2496	1	16800	6.7	$290	0.9	$162	15.0	$392	$845	$1,358
	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$4
	F208	12	C	2496	2	14000	2.1	$30	0.2	$20	4.0	$75	$125	$26
2	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
3	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
4	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
5	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
6	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
7	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
Building Total		71						$387		$220		$575	$1,183	$1,809

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	F312	6	11-0	C	35	290	27	132	0.79	$266	$27	$84	F312	0	132	0.00	$0	F312	6	48	52	1,977	0	1,977	$376
	I200	2	11-0	C	35	290	27	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
2	I200	9	11-0	C	35	360	33	200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
	F212	1	11-0	C	35	360	33	82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
3	I200	39	11-0	C	32	44	4	200	7.80	$1,002	$0	$553	I200	16	200	3.20	$11,339	I200	55	48	52	19,469	7,987	27,456	$12,894
	F212	5	11-0	C	32	44	4	82	0.41	$187	$18	$74	F212	0	82	0.00	$0	F212	5	48	52	1,023	0	1,023	$279
4	I200	12	11-0	C	32	62	6	200	2.40	$308	$0	$170	I200	5	200	1.00	$3,544	I200	17	48	52	5,990	2,496	8,486	$4,022
	F312	8	10-0	B	32	62	6	132	1.06	$354	$36	$111	F312	4	132	0.53	$2,785	F312	12	48	52	2,636	1,318	3,954	$3,287
5	I200	6	11-0	C	36	129	12	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
6	I200	6	11-0	C	36	20	2	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
7	I200	3	10-0	B	32	198	18	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	2	11-0	C	32	198	18	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F212	1	10-0	B	32	198	18	82	0.08	$37	$4	$15	F212	1	82	0.08	$738	F212	2	48	52	205	205	409	$794
8	I200	3	11-0	R	36	260	24	200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
9	I200	8	11-0	R	36	260	24	200	1.60	$206	$0	$113	I200	0	200	0.00	$0	I200	8	48	52	3,994	0	3,994	$319
10	I200	8	11-0	R				200	1.60	$206	$0	$113	I200	0	200	0.00	$0	I200	8	48	52	3,994	0	3,994	$319
11	I200	2	11-0	R				200	0.40	$51	$0	$28	I200	0	200	0.00	$0	I200	2	48	52	998	0	998	$80
12	F212	1	11-0	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
13	I200	1	11-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
New Panel																	$1,500								$1,500
Building Total		123							22.70	$3,513	$92	$1,745		41		7.81	$30,537					56,669	19,494	76,163	$35,887

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	F312	6	C	290	27	132	0.79	$376	F208	6		62	0.37	$4,178	48	52	1,977	929	1,048	($3,802)
	I200	3	C	290	27	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
2	I200	13	C	360	33	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
	F212	1	C	360	33	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
3	I200	55	C	44	4	200	11.00	$12,894	MH70	39		89	3.47	$21,480	48	52	27,456	8,664	18,792	($8,586)
	F212	5	C	44	4	82	0.41	$279	F208	5		62	0.31	$3,482	48	52	1,023	774	250	($3,203)
4	I200	17	C	62	6	200	3.40	$4,022	MH70	12		89	1.07	$6,609	48	52	8,486	2,666	5,821	($2,587)
	F312	12	B	62	6	132	1.58	$3,287	F208	16		62	0.99	$11,142	48	52	3,954	2,476	1,478	($7,854)
5	I200	9	C	129	12	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
6	I200	9	C	20	2	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
7	I200	5	B	198	18	200	1.00	$1,537	F208	5		62	0.31	$3,482	48	52	2,496	774	1,722	($1,945)
	I200	3	C	198	18	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F212	2	B	198	18	82	0.16	$794	F208	1		62	0.06	$696	48	52	409	155	255	$97
8	I200	3	R	260	24	200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
9	I200	8	R	260	24	200	1.60	$319	MH70	8		89	0.71	$4,576	48	52	3,994	1,777	2,216	($4,257)
10	I200	8	R			200	1.60	$319	MH70	8		89	0.71	$4,576	48	52	3,994	1,777	2,216	($4,257)
11	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,144	48	52	998	444	554	($1,064)
12	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
13	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$572	48	52	998	222	776	$177
New Panel								$1,500												$1,500
Building Total		164					30.51	$35,887		133			10.89	$78,751			76,163	27,186	48,977	($42,864)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	F312	6	C	290	27	132	0.79	$376	F208	6		62	0.37	$4,178	48	52	1,977	929	1,048	($3,802)
	I200	3	C	290	27	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
2	I200	13	C	360	33	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
	F212	1	C	360	33	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
3	I200	55	C	44	4	200	11.00	$12,894	HP70	39		99	3.86	$24,060	48	52	27,456	9,637	17,819	($11,166)
	F212	5	C	44	4	82	0.41	$279	F208	5		62	0.31	$3,482	48	52	1,023	774	250	($3,203)
4	I200	17	C	62	6	200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,965	5,521	($3,381)
	F312	12	B	62	6	132	1.58	$3,287	F208	16		62	0.99	$11,142	48	52	3,954	2,476	1,478	($7,854)
5	I200	9	C	129	12	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
6	I200	9	C	20	2	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
7	I200	5	B	198	18	200	1.00	$1,537	F208	5		62	0.31	$3,482	48	52	2,496	774	1,722	($1,945)
	I200	3	C	198	18	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F212	2	B	198	18	82	0.16	$794	F208	1		62	0.06	$696	48	52	409	155	255	$97
8	I200	3	R	260	24	200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
9	I200	8	R	260	24	200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,158	2,835	($4,508)
10	I200	8	R			200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,158	2,835	($4,508)
11	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
12	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
13	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
New Panel								$1,500												$1,500
Building Total		164					30.51	$35,887		133			11.01	$84,545			76,163	27,483	48,679	($48,659)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	F312	6	C	290	27	132	0.79	$376	F312	0		132	0.79	$376	48	52	1,977	1,977	0	$0
	I200	3	C	290	27	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
2	I200	13	C	360	33	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
	F212	1	C	360	33	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
3	I200	55	C	44	4	200	11.00	$12,894	MH70	39		89	3.47	$21,480	48	52	27,456	8,664	18,792	($8,586)
	F212	5	C	44	4	82	0.41	$279	F212	0		82	0.41	$279	48	52	1,023	1,023	0	$0
4	I200	17	C	62	6	200	3.40	$4,022	MH70	12		89	1.07	$6,609	48	52	8,486	2,666	5,821	($2,587)
	F312	12	B	62	6	132	1.58	$3,287	F312	16		132	2.11	$11,142	48	52	3,954	5,272	(1,318)	($7,854)
5	I200	9	C	129	12	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
6	I200	9	C	20	2	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
7	I200	5	B	198	18	200	1.00	$1,537	F312	5		132	0.66	$3,482	48	52	2,496	1,647	849	($1,945)
	I200	3	C	198	18	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F212	2	B	198	18	82	0.16	$794	F312	1		132	0.13	$696	48	52	409	329	80	$97
8	I200	3	R	260	24	200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
9	I200	8	R	260	24	200	1.60	$319	MH70	8		89	0.71	$4,406	48	52	3,994	1,777	2,216	($4,087)
10	I200	8	R			200	1.60	$319	MH70	8		89	0.71	$4,406	48	52	3,994	1,777	2,216	($4,087)
11	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
12	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
13	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
New Panel								$1,500												$1,500
Building Total		164					30.51	$35,887		120			12.99	$70,060			76,163	32,428	43,735	($34,174)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	F312	6	C	290	27	132	0.79	$376	F312	0		132	0.79	$376	48	52	1,977	1,977	0	$0
	I200	3	C	290	27	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
2	I200	13	C	360	33	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
	F212	1	C	360	33	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
3	I200	55	C	44	4	200	11.00	$12,894	HP70	39		99	3.86	$24,060	48	52	27,456	9,637	17,819	($11,166)
	F212	5	C	44	4	82	0.41	$279	F212	0		82	0.41	$279	48	52	1,023	1,023	0	$0
4	I200	17	C	62	6	200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,965	5,521	($3,381)
	F312	12	B	62	6	132	1.58	$3,287	F312	16		132	2.11	$11,142	48	52	3,954	5,272	(1,318)	($7,854)
5	I200	9	C	129	12	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
6	I200	9	C	20	2	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
7	I200	5	B	198	18	200	1.00	$1,537	F312	5		132	0.66	$3,482	48	52	2,496	1,647	849	($1,945)
	I200	3	C	198	18	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F212	2	B	198	18	82	0.16	$794	F312	1		132	0.13	$696	48	52	409	329	80	$97
8	I200	3	R	260	24	200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
9	I200	8	R	260	24	200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,158	2,835	($4,508)
10	I200	8	R			200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,158	2,835	($4,508)
11	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
12	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
13	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
New Panel								$1,500												$1,500
Building Total		164					30.51	$35,887		120			13.11	$76,259			76,163	32,725	43,438	($40,372)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	F312	6	C	290	27	132	0.79	$376	F208	6		62	0.37	$4,178	48	52	1,977	929	1,048	($3,802)
	I200	3	C	290	27	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
2	I200	13	C	360	33	200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
	F212	1	C	360	33	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
3	I200	55	C	44	4	200	11.00	$12,894	HP50	39		58	2.26	$23,529	48	52	27,456	5,646	21,810	($10,635)
	F212	5	C	44	4	82	0.41	$279	F208	5		62	0.31	$3,482	48	52	1,023	774	250	($3,203)
4	I200	17	C	62	6	200	3.40	$4,022	HP50	12		58	0.70	$7,240	48	52	8,486	1,737	6,749	($3,218)
	F312	12	B	62	6	132	1.58	$3,287	F208	15		62	0.99	$11,142	48	52	3,954	2,476	1,478	($7,854)
5	I200	9	C	129	12	200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
6	I200	9	C	20	2	200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
7	I200	5	B	198	18	200	1.00	$1,537	F208	5		62	0.31	$3,482	48	52	2,496	774	1,722	($1,945)
	I200	3	C	198	18	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F212	2	B	198	18	82	0.16	$794	F208	1		62	0.06	$696	48	52	409	155	255	$97
8	I200	3	R	260	24	200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
9	I200	8	R	260	24	200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,158	2,835	($4,508)
10	I200	8	R			200	1.60	$319	HP50	8		58	0.46	$4,826	48	52	3,994	1,158	2,835	($4,508)
11	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
12	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
13	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
New Panel								$1,500												$1,500
Building Total		164					30.51	$35,887		133			7.85	$83,497			76,163	19,604	56,559	($47,610)

X1-1

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F312	6	C	24	18	432	5.83	30%	30%	20%						
	I200	3	C	24	18	432	5.83	30%	30%	20%	0.241	1	3400	10200	0.86	4.92
2	I200	13	C	24	18	432	5.83	30%	30%	20%	0.241	1	3400	44200	0.86	21.32
	F212	1	C	24	18	432	5.83	30%	30%	20%						
3	I200	55	C	78	30	2340	2.77	30%	30%	20%	0.376	1	3400	187000	0.86	25.98
	F212	5	C	78	30	2340	2.77	30%	30%	20%						
4	I200	17	C	78	16	1248	4.52	30%	30%	20%	0.286	1	3400	57800	0.86	11.45
	F312	12	B	78	16	1248	1.88	30%	10%	20%	0.404	3	2570	92520	0.92	27.60
5	I200	9	C	28	15	420	6.14	30%	30%	20%	0.232	1	3400	30600	0.86	14.61
6	I200	9	C	28	13	364	6.76	30%	30%	20%	0.215	1	3400	30600	0.86	15.63
7	I200	5	B	28	18	504	2.28	30%	10%	20%	0.373	1	3400	17000	0.86	10.88
	I200	3	C	28	18	504	5.48	30%	30%	20%	0.252	1	3400	10200	0.86	4.41
	F212	2	B	28	18	504	2.28	30%	10%	20%	0.520	2	2570	10280	0.92	9.77
8	I200	3	R	52	8	416	3.61	30%	30%	20%	0.329	1	3400	10200	0.86	6.97
9	I200	8	R	132	8	1056	3.31	30%	30%	20%	0.345	1	3400	27200	0.86	7.68
10	I200	8	R	132	8	1056	3.31	30%	30%	20%	0.345	1	3400	27200	0.86	7.68
11	I200	2	R	52	8	416	3.61	30%	30%	20%	0.329	1	3400	6800	0.86	4.65
12	F212	1	C	15	8	120	11.50	30%	30%	20%						
13	I200	2	C	15	8	120	11.50	30%	30%	20%	0.140	1	3400	6800	0.86	6.86

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F208	6	C	24	18	432	5.83	30%	30%	20%						
	MH70	2	C	24	18	432	5.83	30%	30%	20%	0.204	1	4000	8000	0.90	3.41
2	MH70	9	C	24	18	432	5.83	30%	30%	20%	0.204	1	4000	36000	0.90	15.34
	F208	1	C	24	18	432	5.83	30%	30%	20%						
3	MH70	39	C	78	30	2340	2.77	30%	30%	20%	0.332	1	4000	156000	0.90	19.97
	F208	5	C	78	30	2340	2.77	30%	30%	20%						
4	MH70	12	C	78	16	1248	4.52	30%	30%	20%	0.246	1	4000	48000	0.90	8.54
	F208	16	B	78	16	1248	1.88	30%	10%	20%	0.590	2	2650	84800	0.92	36.95
5	MH70	6	C	28	15	420	6.14	30%	30%	20%	0.196	1	4000	24000	0.90	10.10
6	MH70	6	C	28	13	364	6.76	30%	30%	20%	0.180	1	4000	24000	0.90	10.71
7	F208	5	B	28	18	504	2.28	30%	10%	20%	0.563	2	2650	26500	0.92	27.28
	MH70	2	C	28	18	504	5.48	30%	30%	20%	0.214	1	4000	8000	0.90	3.06
	F208	1	B	28	18	504	2.28	30%	10%	20%	0.563	2	2650	5300	0.92	5.46
8	MH70	3	R	52	8	416	3.61	30%	30%	20%	0.286	1	4000	12000	0.90	7.44
9	MH70	8	R	132	8	1056	3.31	30%	30%	20%	0.301	1	4000	32000	0.90	8.23
10	MH70	8	R	132	8	1056	3.31	30%	30%	20%	0.301	1	4000	32000	0.90	8.23
11	MH70	2	R	52	8	416	3.61	30%	30%	20%	0.286	1	4000	8000	0.90	4.96
12	F208	1	C	15	8	120	11.50	30%	30%	20%						
13	MH70	1	C	15	8	120	11.50	30%	30%	20%	0.115	1	4000	4000	0.90	3.46

A1-C

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F208	6	C	24	18	432	5.83	30%	30%	20%						
	HP70	2	C	24	18	432	5.83	30%	30%	20%	0.320	1	5450	10900	0.94	7.60
2	HP70	9	C	24	18	432	5.83	30%	30%	20%	0.320	1	5450	49050	0.94	34.19
	F208	1	C	24	18	432	5.83	30%	30%	20%						
3	HP70	39	C	78	30	2340	2.77	30%	30%	20%	0.519	1	5450	212550	0.94	44.36
	F208	5	C	78	30	2340	2.77	30%	30%	20%						
4	HP70	12	C	78	16	1248	4.52	30%	30%	20%	0.387	1	5450	65400	0.94	19.08
	F208	16	B	78	16	1248	1.88	30%	10%	20%	0.590	2	2650	84800	0.92	36.95
5	HP70	6	C	28	15	420	6.14	30%	30%	20%	0.306	1	5450	32700	0.94	22.42
6	HP70	6	C	28	13	364	6.76	30%	30%	20%	0.282	1	5450	32700	0.94	23.84
7	F208	5	B	28	18	504	2.28	30%	10%	20%	0.563	2	2650	26500	0.92	27.28
	HP70	2	C	28	18	504	5.48	30%	30%	20%	0.335	1	5450	10900	0.94	6.82
	F208	1	B	28	18	504	2.28	30%	10%	20%	0.563	2	2650	5300	0.92	5.46
8	HP50	3	R	52	8	416	3.61	30%	30%	20%	0.449	1	3600	10800	0.94	10.97
9	HP50	8	R	132	8	1056	3.31	30%	30%	20%	0.473	1	3600	28800	0.94	12.14
10	HP50	8	R	132	8	1056	3.31	30%	30%	20%	0.473	1	3600	28800	0.94	12.14
11	HP50	2	R	52	8	416	3.61	30%	30%	20%	0.449	1	3600	7200	0.94	7.31
12	F208	1	C	15	8	120	11.50	30%	30%	20%						
13	HP70	1	C	15	8	120	11.50	30%	30%	20%	0.138	1	5450	5450	0.94	5.90

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F312	6	C	24	18	432	5.83	30%	30%	20%						
	MH70	2	C	24	18	432	5.83	30%	30%	20%	0.204	1	4000	8000	0.90	3.41
2	MH70	9	C	24	18	432	5.83	30%	30%	20%	0.204	1	4000	36000	0.90	15.34
	F212	1	C	24	18	432	5.83	30%	30%	20%						
3	MH70	39	C	78	30	2340	2.77	30%	30%	20%	0.332	1	4000	156000	0.90	19.97
	F212	5	C	78	30	2340	2.77	30%	30%	20%						
4	MH70	12	C	78	16	1248	4.52	30%	30%	20%	0.246	1	4000	48000	0.90	8.54
	F312	16	B	78	16	1248	1.88	30%	10%	20%	0.590	3	2570	123360	0.92	53.75
5	MH70	6	C	28	15	420	6.14	30%	30%	20%	0.196	1	4000	24000	0.90	10.10
6	MH70	6	C	28	13	364	6.76	30%	30%	20%	0.180	1	4000	24000	0.90	10.71
7	F312	5	B	28	18	504	2.28	30%	10%	20%	0.563	3	2570	38550	0.92	39.69
	MH70	2	C	28	18	504	5.48	30%	30%	20%	0.214	1	4000	8000	0.90	3.06
	F312	1	B	28	18	504	2.28	30%	10%	20%	0.563	3	2570	7710	0.92	7.94
8	MH70	3	R	52	8	416	3.61	30%	30%	20%	0.286	1	4000	12000	0.90	7.44
9	MH70	8	R	132	8	1056	3.31	30%	30%	20%	0.301	1	4000	32000	0.90	8.23
10	MH70	8	R	132	8	1056	3.31	30%	30%	20%	0.301	1	4000	32000	0.90	8.23
11	MH70	2	R	52	8	416	3.61	30%	30%	20%	0.286	1	4000	8000	0.90	4.96
12	F212	1	C	15	8	120	11.50	30%	30%	20%						
13	MH70	1	C	15	8	120	11.50	30%	30%	20%	0.115	1	4000	4000	0.90	3.46

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F312	6	C	24	18	432	5.83	30%	30%	20%						
	HP70	2	C	24	18	432	5.83	30%	30%	20%	0.320	1	5450	10900	0.94	7.60
2	HP70	9	C	24	18	432	5.83	30%	30%	20%	0.320	1	5450	49050	0.94	34.19
	F212	1	C	24	18	432	5.83	30%	30%	20%						
3	HP70	39	C	78	30	2340	2.77	30%	30%	20%	0.519	1	5450	212550	0.94	44.36
	F212	5	C	78	30	2340	2.77	30%	30%	20%						
4	HP70	12	C	78	16	1248	4.52	30%	30%	20%	0.387	1	5450	65400	0.94	19.08
	F312	16	B	78	16	1248	1.88	30%	10%	20%	0.590	3	2570	123360	0.92	53.75
5	HP70	6	C	28	15	420	6.14	30%	30%	20%	0.306	1	5450	32700	0.94	22.42
6	HP70	6	C	28	13	364	6.76	30%	30%	20%	0.282	1	5450	32700	0.94	23.84
7	F312	5	B	28	18	504	2.28	30%	10%	20%	0.563	3	2570	38550	0.92	39.69
	HP70	2	C	28	18	504	5.48	30%	30%	20%	0.335	1	5450	10900	0.94	6.82
	F312	1	B	28	18	504	2.28	30%	10%	20%	0.563	3	2570	7710	0.92	7.94
8	HP50	3	R	52	8	416	3.61	30%	30%	20%	0.449	1	3600	10800	0.94	10.97
9	HP50	8	R	132	8	1056	3.31	30%	30%	20%	0.473	1	3600	28800	0.94	12.14
10	HP50	8	R	132	8	1056	3.31	30%	30%	20%	0.473	1	3600	28800	0.94	12.14
11	HP50	2	R	52	8	416	3.61	30%	30%	20%	0.449	1	3600	7200	0.94	7.31
12	F212	1	C	15	8	120	11.50	30%	30%	20%						
13	HP70	1	C	15	8	120	11.50	30%	30%	20%	0.138	1	5450	5450	0.94	5.90

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F208	6	C	24	18	432	5.83	30%	30%	20%						
	HP50	2	C	24	18	432	5.83	30%	30%	20%	0.320	1	3600	7200	0.94	5.02
2	HP50	9	C	24	18	432	5.83	30%	30%	20%	0.320	1	3600	32400	0.94	22.58
	F208	1	C	24	18	432	5.83	30%	30%	20%						
3	HP50	39	C	78	30	2340	2.77	30%	30%	20%	0.519	1	3600	140400	0.94	29.30
	F208	5	C	78	30	2340	2.77	30%	30%	20%						
4	HP50	12	C	78	16	1248	4.52	30%	30%	20%	0.387	1	3600	43200	0.94	12.60
	F208	16	B	78	16	1248	1.88	30%	10%	20%	0.590	2	2650	84800	0.92	36.95
5	HP50	6	C	28	15	420	6.14	30%	30%	20%	0.306	1	3600	21600	0.94	14.81
6	HP50	6	C	28	13	364	6.76	30%	30%	20%	0.282	1	3600	21600	0.94	15.75
7	F208	5	B	28	18	504	2.28	30%	10%	20%	0.563	2	2650	26500	0.92	27.28
	HP50	2	C	28	18	504	5.48	30%	30%	20%	0.335	1	3600	7200	0.94	4.50
	F208	1	B	28	18	504	2.28	30%	10%	20%	0.563	2	2650	5300	0.92	5.46
8	HP50	3	R	52	8	416	3.61	30%	30%	20%	0.449	1	3600	10800	0.94	10.97
9	HP50	8	R	132	8	1056	3.31	30%	30%	20%	0.473	1	3600	28800	0.94	12.14
10	HP50	8	R	132	8	1056	3.31	30%	30%	20%	0.473	1	3600	28800	0.94	12.14
11	HP50	2	R	52	8	416	3.61	30%	30%	20%	0.449	1	3600	7200	0.94	7.31
12	F208	1	C	15	8	120	11.50	30%	30%	20%						
13	HP50	1	C	15	8	120	11.50	30%	30%	20%	0.138	1	3600	3600	0.94	3.90

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	F312	6	C	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
2	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
3	I200	55	C	2496	1	700	196.1	$1,955	0.0	$0	18.3	$288	$2,243
	F212	5	C	2496	2	14000	0.9	$16	0.1	$7	1.7	$31	$55
4	I200	17	C	2496	1	700	60.6	$604	0.0	$0	5.7	$89	$693
	F312	12	B	2496	3	14000	2.1	$54	0.2	$22	4.0	$75	$151
5	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
6	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
7	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F212	2	B	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
8	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
9	I200	8	R	2496	1	700	28.5	$284	0.0	$0	2.7	$42	$326
10	I200	8	R	2496	1	700	28.5	$284	0.0	$0	2.7	$42	$326
11	I200	2	R	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
12	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
13	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
Building Total		164						$4,982		$45		$888	$5,915

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$13
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
2	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
3	MH70	39	C	2496	1	5250	18.5	$1,202	0.8	$140	13.0	$340	$1,683	$561
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$3
4	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
	F208	16	B	2496	2	14000	2.9	$40	0.3	$26	5.3	$101	$167	($15)
5	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
6	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
7	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$152
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$12
8	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
9	MH70	8	R	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($19)
10	MH70	8	R	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($19)
11	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
12	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
13	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Building Total		133						$3,109		$410		$1,075	$4,594	$1,321

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$13
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
2	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
3	HP70	39	C	2496	1	16800	5.8	$229	0.8	$145	13.0	$340	$715	$1,529
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$3
4	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
	F208	16	B	2496	2	14000	2.9	$40	0.3	$26	5.3	$101	$167	($15)
5	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
6	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
7	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$152
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$12
8	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
9	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
10	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
11	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
12	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
13	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
Building Total		133						$677		$419		$1,075	$2,170	$3,744

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	F312	6	C	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$0
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
2	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
3	MH70	39	C	2496	1	5250	18.5	$1,202	0.8	$140	13.0	$340	$1,683	$561
	F212	5	C	2496	2	14000	0.9	$16	0.1	$7	1.7	$31	$55	$0
4	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
	F312	16	B	2496	3	14000	2.9	$73	0.3	$29	5.3	$101	$202	($50)
5	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
6	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
7	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$141
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$9
8	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
9	MH70	8	R	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($19)
10	MH70	8	R	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	($19)
11	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
12	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
13	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Building Total		133						$3,172		$413		$1,075	$4,659	$1,255

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	F312	6	C	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$0
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
2	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
3	HP70	39	C	2496	1	16800	5.8	$229	0.8	$145	13.0	$340	$715	$1,529
	F212	5	C	2496	2	14000	0.9	$16	0.1	$7	1.7	$31	$55	$0
4	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
	F312	16	B	2496	3	14000	2.9	$73	0.3	$29	5.3	$101	$202	($50)
5	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
6	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
7	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$141
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$9
8	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
9	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
10	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
11	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
12	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
13	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
Building Total		133						$739		$423		$1,075	$2,236	$3,679

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-8
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	F208	6	C	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$13
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
2	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
3	HP50	39	C	2496	1	16800	5.8	$252	0.8	$140	13.0	$340	$732	$1,511
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$3
4	HP50	12	C	2496	1	16800	1.8	$77	0.2	$43	4.0	$105	$225	$468
	F208	16	B	2496	2	14000	2.9	$40	0.3	$26	5.3	$101	$167	($15)
5	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
6	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
7	F208	5	B	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$152
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$12
8	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
9	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
10	HP50	8	R	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$176
11	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
12	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
13	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
Building Total		133						$720		$410		$1,075	$2,205	$3,710

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (bx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	3	11-0	C	36	120	11	200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
2	I200	3	11-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
3	I200	2	10-0	B				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	1	10-0	B				132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
	I200	7	11-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
4	F312	4	10-0	B	32	194	18	132	0.53	$177	$18	$56	F312	2	132	0.26	$1,393	F312	6	48	52	1,318	659	1,977	$1,644
	I200	4	11-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
5	F312	7	11-0	C				132	0.92	$310	$32	$97	F312	0	132	0.00	$0	F312	7	48	52	2,306	0	2,306	$439
6	I200	33	11-0	C				200	6.60	$848	$0	$468	I200	14	200	2.80	$9,922	I200	47	48	52	16,474	6,989	23,462	$11,237
	F312	5	10-0	C	32	26	2	132	0.66	$221	$23	$70	F312	0	132	0.00	$0	F312	5	48	52	1,647	0	1,647	$314
	F312	26	10-0	B	32	171	16	132	3.43	$1,152	$117	$362	F312	11	132	1.45	$7,660	F312	37	48	52	8,566	3,624	12,190	$9,290
	I200	15	10-0	B	32	171	16	200	3.00	$385	$0	$213	I200	6	200	1.20	$4,252	I200	21	48	52	7,488	2,995	10,483	$4,850
7	I200	13	11-0	C				200	2.60	$334	$0	$184	I200	6	200	1.20	$4,252	I200	19	48	52	6,490	2,995	9,485	$4,770
	F312	3	10-0	B	32	250	23	132	0.40	$133	$14	$42	F312	2	132	0.26	$1,393	F312	5	48	52	988	659	1,647	$1,581
	I200	2	11-0	B	32	250	23	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
8	I200	11	11-0	C				200	2.20	$283	$0	$156	I200	5	200	1.00	$3,544	I200	16	48	52	5,491	2,496	7,987	$3,982
	I200	4	10-0	B	32	346	32	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
9	I200	3	10-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	5	11-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
10	I200	10	11-0	C				200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
	F312	2	11-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	I200	1	10-0	B	32	301	28	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F312	2	10-0	B	32	301	28	132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
11	I200	20	8-8	R	36	155	14	200	4.00	$514	$0	$283	I200	0	200	0.00	$0	I200	20	48	52	9,984	0	9,984	$797
12	I200	3	8-8	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
13	I200	9	11-0	C				200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
	F312	3	10-0	B	32	43	4	132	0.40	$133	$14	$42	F312	2	132	0.26	$1,393	F312	5	48	52	988	659	1,647	$1,581
	F312	2	11-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
14	I200	4	11-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	2	10-0	B				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	1	10-0	B				132	0.13	$44	$5	$14	F312	1	132	0.13	$696	F312	2	48	52	329	329	659	$759
New Panel																	$1,500								$1,500
Page Total		210							38.19	$6,437	$252	$2,963		80		14.64	$57,949					95,327	36,541	131,869	$67,600

X1-14

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures											Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
15	I200	9	11-0	C	20	60	6	200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
	I200	3	10-0	B				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	I200	1	10-0	B				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
16	I200	7	11-0	C				200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
	I200	6	10-0	B	32	376	35	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
17	I200	4	11-0	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	1	10-0	B	32	386	36	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	F312	2	10-0	B	32	386	36	132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
18	I200	5	9-8	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	I200	4	7-8	C				200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F312	4	10-0	B	32	268	25	132	0.53	$177	$18	$56	F312	2	132	0.26	$1,393	F312	6	48	52	1,318	659	1,977	$1,644
19	I200	8	11-0	C				200	1.60	$206	$0	$113	I200	4	200	0.80	$2,835	I200	12	48	52	3,994	1,997	5,990	$3,154
	F312	3	10-0	B				132	0.40	$133	$14	$42	F312	2	132	0.26	$1,393	F312	5	48	52	988	659	1,647	$1,581
RN	I200	20	8-8	R				200	4.00	$514	$0	$283	I200	0	200	0.00	$0	I200	20	48	52	9,984	0	9,984	$797
RE	I200	3	8-8	R				200	0.60	$77	$0	$43	I200	0	200	0.00	$0	I200	3	48	52	1,498	0	1,498	$120
Page Total		80							15.39	$2,223	$41	$1,132		29		5.46	$20,491					38,408	13,628	52,037	$23,885
Building Tot		290							53.58	$8,659	$293	$4,094		109		20.10	$78,440					133,736	50,170	183,905	$91,486

A1-20

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	5	C	120	11	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
2	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
3	I200	3	B			200	0.60	$788	F208	4		62	0.25	$2,785	48	52	1,498	619	879	($1,997)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
4	F312	6	B	194	18	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
5	F312	7	C			132	0.92	$439	F208	7		62	0.43	$4,874	48	52	2,306	1,083	1,223	($4,435)
6	I200	47	C			200	9.40	$11,237	MH70	33		89	2.94	$18,175	48	52	23,462	7,331	16,132	($6,938)
	F312	5	C	26	2	132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
	F312	37	B	171	16	132	4.88	$9,290	F208	26		62	1.61	$18,105	48	52	12,190	4,024	8,167	($8,815)
	I200	21	B	171	16	200	4.20	$4,850	F208	13		62	0.81	$9,053	48	52	10,483	2,012	8,471	($4,202)
7	I200	19	C			200	3.80	$4,770	MH70	13		89	1.16	$7,160	48	52	9,485	2,888	6,597	($2,389)
	F312	5	B	250	23	132	0.66	$1,581	F208	3		62	0.19	$2,089	48	52	1,647	464	1,183	($508)
	I200	3	B	250	23	200	0.60	$788	F208	4		62	0.25	$2,785	48	52	1,498	619	879	($1,997)
8	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	I200	6	B	346	32	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
9	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
10	I200	14	C			200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	2	B	301	28	200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	F312	3	B	301	28	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
11	I200	20	R	155	14	200	4.00	$797	MH70	20		89	1.78	$11,015	48	52	9,984	4,443	5,541	($10,218)
12	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
13	I200	13	C			200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
	F312	5	B	43	4	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
14	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	3	B			200	0.60	$788	F208	2		62	0.12	$1,393	48	52	1,498	310	1,188	($604)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
New Panel								$1,500												$1,500
Page Total		290					52.83	$67,600		214			16.64	$130,820			131,869	41,541	90,328	($63,220)

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	13	C	60	6	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
16	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	9	B	376	35	200	1.80	$2,365	F208	4		62	0.25	$2,785	48	52	4,493	619	3,874	($420)
17	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	2	B	386	36	200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
	F312	3	B	386	36	132	0.42	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
18	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	6	B	268	25	132	0.84	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
19	I200	12	C			200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
	F312	5	B			132	0.70	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
RN	I200	20	R			200	4.00	$797	MH70	20		89	1.78	$11,015	48	52	9,984	4,443	5,541	($10,218)
RE	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
Page Total		109					20.95	$23,885		79			6.52	$46,276			52,037	16,269	35,768	($22,391)
Building Tot		399					73.78	$91,486		293			23.16	$177,096			183,905	57,810	126,095	($85,611)

X1 - [illegible]

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	5	C	120	11	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
2	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
3	I200	3	B			200	0.60	$788	F208	4		62	0.25	$2,785	48	52	1,498	619	879	($1,997)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
4	F312	6	B	194	18	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
5	F312	7	C			132	0.92	$439	F208	7		62	0.43	$4,874	48	52	2,306	1,083	1,223	($4,435)
6	I200	47	C			200	9.40	$11,237	HP70	33		99	3.27	$20,359	48	52	23,462	8,154	15,308	($9,121)
	F312	5	C	26	2	132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
	F312	37	B	171	16	132	4.88	$9,290	F208	26		62	1.61	$18,105	48	52	12,190	4,024	8,167	($8,815)
	I200	21	B	171	16	200	4.20	$4,850	F208	13		62	0.81	$9,053	48	52	10,483	2,012	8,471	($4,202)
7	I200	19	C			200	3.80	$4,770	HP70	13		99	1.29	$8,020	48	52	9,485	3,212	6,272	($3,250)
	F312	5	B	250	23	132	0.66	$1,581	F208	3		62	0.19	$2,089	48	52	1,647	464	1,183	($508)
	I200	3	B	250	23	200	0.60	$788	F208	4		62	0.25	$2,785	48	52	1,498	619	879	($1,997)
8	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	I200	6	B	346	32	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
9	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
10	I200	14	C			200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	2	B	301	28	200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	F312	3	B	301	28	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
11	I200	20	R	155	14	200	4.00	$797	HP50	20		58	1.16	$12,066	48	52	9,984	2,895	7,089	($11,269)
12	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
13	I200	13	C			200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
	F312	5	B	43	4	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
14	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	3	B			200	0.60	$788	F208	2		62	0.12	$1,393	48	52	1,498	310	1,188	($604)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
New Panel								$1,500												$1,500
Page Total		290					52.83	$67,600		214			16.95	$138,778			131,869	42,307	89,561	($71,178)

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	13	C	60	6	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
16	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	9	B	376	35	200	1.80	$2,365	F208	4		62	0.25	$2,785	48	52	4,493	619	3,874	($420)
17	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	2	B	386	36	200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
	F312	3	B	386	36	132	0.38	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
18	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	6	B	268	25	132	0.75	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
19	I200	12	C			200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
	F312	5	B			132	0.63	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
RN	I200	20	R			200	4.00	$797	HP50	20		58	1.16	$12,066	48	52	9,984	2,895	7,089	($11,269)
RE	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Page Total		109					20.75	$23,885		79			6.18	$49,933			52,037	15,413	36,624	($26,048)
Building Tot		399					73.58	$91,486		293			23.13	$188,711			183,905	57,720	126,185	($97,226)

X1-24

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	5	C	120	11	200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
2	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
3	I200	3	B			200	0.60	$788	F312	4		132	0.53	$2,785	48	52	1,498	1,318	180	($1,997)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
4	F312	6	B	194	18	132	0.79	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
5	F312	7	C			132	0.92	$439	F312	0		132	0.92	$439	48	52	2,306	2,306	0	$0
6	I200	47	C			200	9.40	$11,237	MH70	33		89	2.94	$18,175	48	52	23,462	7,331	16,132	($6,938)
	F312	5	C	26	2	132	0.66	$314	F312	0		132	0.66	$314	48	52	1,647	1,647	0	$0
	F312	37	B	171	16	132	4.88	$9,290	F312	26		132	3.43	$18,105	48	52	12,190	8,566	3,624	($8,815)
	I200	21	B	171	16	200	4.20	$4,850	F312	13		132	1.72	$9,053	48	52	10,483	4,283	6,200	($4,202)
7	I200	19	C			200	3.80	$4,770	MH70	13		89	1.16	$7,160	48	52	9,485	2,888	6,597	($2,389)
	F312	5	B	250	23	132	0.66	$1,581	F312	3		132	0.40	$2,089	48	52	1,647	988	659	($508)
	I200	3	B	250	23	200	0.60	$788	F312	4		132	0.53	$2,785	48	52	1,498	1,318	180	($1,997)
8	I200	16	C			200	3.20	$3,982	MH70	11		89	0.98	$6,058	48	52	7,987	2,444	5,544	($2,076)
	I200	6	B	346	32	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
9	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
10	I200	14	C			200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	2	B	301	28	200	0.40	$749	F312	2		132	0.26	$1,393	48	52	998	659	339	($644)
	F312	3	B	301	28	132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
11	I200	20	R	155	14	200	4.00	$797	MH70	20		89	1.78	$11,015	48	52	9,984	4,443	5,541	($10,218)
12	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
13	I200	13	C			200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
	F312	5	B	43	4	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
14	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	3	B			200	0.60	$788	F312	2		132	0.26	$1,393	48	52	1,498	659	839	($604)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
New Panel								$1,500												$1,500
Page Total		290					52.83	$67,600		198			22.87	$120,682			131,869	57,091	74,778	($53,082)

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	13	C	60	6	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	I200	2	B			200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
16	I200	10	C			200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	9	B	376	35	200	1.80	$2,365	F312	4		132	0.53	$2,785	48	52	4,493	1,318	3,175	($420)
17	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	2	B	386	36	200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
	F312	3	B	386	36	132	0.38	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
18	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	I200	6	C			200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F312	6	B	268	25	132	0.75	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
19	I200	12	C			200	2.40	$3,154	MH70	8		89	0.71	$4,406	48	52	5,990	1,777	4,213	($1,252)
	F312	5	B			132	0.63	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
RN	I200	20	R			200	4.00	$797	MH70	20		89	1.78	$11,015	48	52	9,984	4,443	5,541	($10,218)
RE	I200	3	R			200	0.60	$120	MH70	3		89	0.27	$1,652	48	52	1,498	666	831	($1,533)
Page Total		109					20.75	$23,885		79			7.85	$46,276			52,037	19,589	32,448	($22,391)
Building Tot		399					73.58	$91,486		277			30.72	$166,958			183,905	76,680	107,226	($75,473)

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	5	C	120	11	200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
2	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
3	I200	3	B			200	0.60	$788	F312	4		132	0.53	$2,785	48	52	1,498	1,318	180	($1,997)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
4	F312	6	B	194	18	132	0.79	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
5	F312	7	C			132	0.92	$439	F312	0		132	0.92	$439	48	52	2,306	2,306	0	$0
6	I200	47	C			200	9.40	$11,237	HP70	33		99	3.27	$20,359	48	52	23,462	8,154	15,308	($9,121)
	F312	5	C	26	2	132	0.66	$314	F312	0		132	0.66	$314	48	52	1,647	1,647	0	$0
	F312	37	B	171	16	132	4.88	$9,290	F312	26		132	3.43	$18,105	48	52	12,190	8,566	3,624	($8,815)
	I200	21	B	171	16	200	4.20	$4,850	F312	13		132	1.72	$9,053	48	52	10,483	4,283	6,200	($4,202)
7	I200	19	C			200	3.80	$4,770	HP70	13		99	1.29	$8,020	48	52	9,485	3,212	6,272	($3,250)
	F312	5	B	250	23	132	0.66	$1,581	F312	3		132	0.40	$2,089	48	52	1,647	988	659	($508)
	I200	3	B	250	23	200	0.60	$788	F312	4		132	0.53	$2,785	48	52	1,498	1,318	180	($1,997)
8	I200	16	C			200	3.20	$3,982	HP70	11		99	1.09	$6,786	48	52	7,987	2,718	5,269	($2,804)
	I200	6	B	346	32	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
9	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
10	I200	14	C			200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	I200	2	B	301	28	200	0.40	$749	F312	2		132	0.26	$1,393	48	52	998	659	339	($644)
	F312	3	B	301	28	132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
11	I200	20	R	155	14	200	4.00	$797	HP50	20		58	1.16	$12,066	48	52	9,984	2,895	7,089	($11,269)
12	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
13	I200	13	C			200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
	F312	5	B	43	4	132	0.66	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
14	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	3	B			200	0.60	$788	F312	2		132	0.26	$1,393	48	52	1,498	659	839	($604)
	F312	2	B			132	0.26	$759	F312	1		132	0.13	$696	48	52	659	329	329	$63
New Panel								$1,500												$1,500
Page Total		290					52.83	$67,600		198			23.18	$128,640			131,869	57,857	74,011	($61,040)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	13	C	60	6	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
	I200	5	B			200	1.00	$1,537	F312	3		132	0.40	$2,089	48	52	2,496	988	1,508	($552)
	I200	2	B			200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
16	I200	10	C			200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	9	B	376	35	200	1.80	$2,365	F312	4		132	0.53	$2,785	48	52	4,493	1,318	3,175	($420)
17	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	2	B	386	36	200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
	F312	3	B	386	36	132	0.38	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
18	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	I200	6	C			200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F312	6	B	268	25	132	0.75	$1,644	F312	4		132	0.53	$2,785	48	52	1,977	1,318	659	($1,142)
19	I200	12	C			200	2.40	$3,154	HP70	8		99	0.79	$4,935	48	52	5,990	1,977	4,014	($1,782)
	F312	5	B			132	0.63	$1,581	F312	4		132	0.53	$2,785	48	52	1,647	1,318	329	($1,205)
RN	I200	20	R			200	4.00	$797	HP50	20		58	1.16	$12,066	48	52	9,984	2,895	7,089	($11,269)
RE	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Page Total		109					20.75	$23,885		79			7.51	$49,933			52,037	18,732	33,304	($26,048)
Building Tot		399					73.58	$91,486		277			30.69	$178,573			183,905	76,590	107,316	($87,088)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	5	C	120	11	200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
2	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
3	I200	3	B			200	0.60	$788	F208	4		62	0.25	$2,785	48	52	1,498	619	879	($1,997)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
4	F312	6	B	194	18	132	0.79	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
5	F312	7	C			132	0.92	$439	F208	7		62	0.43	$4,874	48	52	2,306	1,083	1,223	($4,435)
6	I200	47	C			200	9.40	$11,237	HP50	33		58	1.91	$19,909	48	52	23,462	4,777	18,685	($8,672)
	F312	5	C	26	2	132	0.66	$314	F208	5		62	0.31	$3,482	48	52	1,647	774	874	($3,168)
	F312	37	B	171	16	132	4.88	$9,290	F208	26		62	1.61	$18,105	48	52	12,190	4,024	8,167	($8,815)
	I200	21	B	171	16	200	4.20	$4,850	F208	13		62	0.81	$9,053	48	52	10,483	2,012	8,471	($4,202)
7	I200	19	C			200	3.80	$4,770	HP50	13		58	0.75	$7,843	48	52	9,485	1,882	7,603	($3,073)
	F312	5	B	250	23	132	0.66	$1,581	F208	3		62	0.19	$2,089	48	52	1,647	464	1,183	($508)
	I200	3	B	250	23	200	0.60	$788	F208	4		62	0.25	$2,785	48	52	1,498	619	879	($1,997)
8	I200	16	C			200	3.20	$3,982	HP50	11		58	0.64	$6,636	48	52	7,987	1,592	6,395	($2,654)
	I200	6	B	346	32	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
9	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
10	I200	14	C			200	2.80	$3,233	HP50	10		58	0.58	$6,033	48	52	6,989	1,448	5,541	($2,800)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	I200	2	B	301	28	200	0.40	$749	F208	2		62	0.12	$1,393	48	52	998	310	689	($644)
	F312	3	B	301	28	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
11	I200	20	R	155	14	200	4.00	$797	HP50	20		58	1.16	$12,066	48	52	9,984	2,895	7,089	($11,269)
12	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
13	I200	13	C			200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
	F312	5	B	43	4	132	0.66	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
14	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	3	B			200	0.60	$788	F208	2		62	0.12	$1,393	48	52	1,498	310	1,188	($604)
	F312	2	B			132	0.26	$759	F208	1		62	0.06	$696	48	52	659	155	504	$63
New Panel								$1,500												$1,500
Page Total		290					52.83	$67,600		214			12.77	$137,389			131,869	31,869	100,000	($69,789)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
15	I200	13	C	60	6	200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
	I200	5	B			200	1.00	$1,537	F208	3		62	0.19	$2,089	48	52	2,496	464	2,032	($552)
	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
16	I200	10	C			200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
	I200	9	B	376	35	200	1.80	$2,365	F208	4		62	0.25	$2,785	48	52	4,493	619	3,874	($420)
17	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	2	B	386	36	200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
	F312	3	B	386	36	132	0.38	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
18	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
	I200	6	C			200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F312	6	B	268	25	132	0.75	$1,644	F208	4		62	0.25	$2,785	48	52	1,977	619	1,358	($1,142)
19	I200	12	C			200	2.40	$3,154	HP50	8		58	0.46	$4,826	48	52	5,990	1,158	4,832	($1,673)
	F312	5	B			132	0.63	$1,581	F208	4		62	0.25	$2,785	48	52	1,647	619	1,028	($1,205)
RN	I200	20	R			200	4.00	$797	HP50	20		58	1.16	$12,066	48	52	9,984	2,895	7,089	($11,269)
RE	I200	3	R			200	0.60	$120	HP50	3		58	0.17	$1,810	48	52	1,498	434	1,063	($1,690)
Page Total		109					20.75	$23,885		79			4.66	$49,429			52,037	11,626	40,410	($25,544)
Building Tot		399					73.58	$91,486		293			17.43	$186,818			183,905	43,495	140,410	($95,333)

X1-30

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	5	C	22	13	286	7.34	30%	30%	20%	0.200	1	3400	17000	0.86	10.28
2	I200	5	C	25	13	325	7.02	30%	30%	20%	0.208	1	3400	17000	0.86	9.41
3	I200	3	B	48	26	1248	1.48	30%	10%	20%	0.474	1	3400	10200	0.86	3.35
	F312	2	B	48	26	1248	1.48	30%	10%	20%	0.568	3	2570	15420	0.92	6.47
	I200	10	C	48	26	1248	3.56	30%	30%	20%	0.331	1	3400	34000	0.86	7.80
4	F312	6	B	25	18	450	2.39	30%	10%	20%	0.509	3	2570	46260	0.92	48.22
	I200	6	C	25	18	450	5.73	30%	30%	20%	0.244	1	3400	20400	0.86	9.56
5	F312	7	C	22	18	396	6.06	30%	30%	20%						
6	I200	47	C	124	48	5952	1.73	30%	30%	20%	0.451	1	3400	159800	0.86	10.47
	F312	5	C	124	48	5952	1.73	30%	30%	20%						
	F312	37	B	124	48	5952	0.72	30%	10%	20%	0.639	3	2570	285270	0.92	28.23
	I200	21	B	124	48	5952	0.72	30%	10%	20%	0.547	1	3400	71400	0.86	5.67
7	I200	19	C	48	29	1392	3.32	30%	30%	20%	0.344	1	3400	64600	0.86	13.80
	F312	5	B	48	29	1392	1.38	30%	10%	20%	0.575	3	2570	38550	0.92	14.68
	I200	3	B	48	29	1392	1.38	30%	10%	20%	0.484	1	3400	10200	0.86	3.07
8	I200	16	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	54400	0.86	15.01
	I200	6	B	48	19	912	1.84	30%	10%	20%	0.441	1	3400	20400	0.86	8.53
9	I200	5	B	48	14	672	2.31	30%	10%	20%	0.406	1	3400	17000	0.86	8.88
	I200	7	C	48	14	672	5.54	30%	30%	20%	0.250	1	3400	23800	0.86	7.65
10	I200	14	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	47600	0.86	13.13
	F312	2	C	48	19	912	4.41	30%	30%	20%						
	I200	2	B	48	19	912	1.84	30%	10%	20%	0.441	1	3400	6800	0.86	2.84
	F312	3	B	48	19	912	1.84	30%	10%	20%	0.543	3	2570	23130	0.92	12.69
11	I200	20	R	400	8	3200	3.19	30%	30%	20%	0.351	1	3400	68000	0.86	6.45
12	I200	3	R	51	8	408	3.62	30%	30%	20%	0.320	1	3400	10200	0.86	6.92
13	I200	13	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	44200	0.86	12.19
	F312	5	B	48	19	912	1.84	30%	10%	20%	0.543	3	2570	38550	0.92	21.15
	F312	2	C	48	19	912	4.41	30%	30%	20%						
14	I200	6	C	48	14	672	5.54	30%	30%	20%	0.250	1	3400	20400	0.86	6.56
	I200	3	B	48	14	672	2.31	30%	10%	20%	0.406	1	3400	10200	0.86	5.33
	F312	2	B	48	14	672	2.31	30%	10%	20%	0.513	3	2570	15420	0.92	10.85

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	I200	13	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	44200	0.86	12.19
	I200	5	B	48	19	912	1.84	30%	10%	20%	0.408	1	3400	17000	0.86	6.57
	I200	2	B	48	19	912	1.84	30%	10%	20%	0.408	1	3400	6800	0.86	2.63
16	I200	10	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	34000	0.86	9.38
	I200	9	B	48	19	912	1.84	30%	10%	20%	0.408	1	3400	30600	0.86	11.83
17	I200	6	C	48	14	672	5.54	30%	30%	20%	0.250	1	3400	20400	0.86	6.56
	I200	2	B	48	14	672	2.31	30%	10%	20%	0.371	1	3400	6800	0.86	3.25
	F312	3	B	48	14	672	2.31	30%	10%	20%	0.491	3	2570	23130	0.92	15.58
18	I200	7	C	48	18	864	4.58	30%	30%	20%	0.284	1	3400	23800	0.86	6.76
	I200	6	C	48	18	864	4.58	30%	30%	20%	0.284	1	3400	20400	0.86	5.80
	F312	6	B	48	18	864	1.91	30%	10%	20%	0.518	3	2570	46260	0.92	25.56
19	I200	12	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	40800	0.86	11.25
	F312	5	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	38550	0.92	20.37
RN	I200	20	R	400	8	3200	3.19	30%	30%	20%	0.351	1	3400	68000	0.86	6.45
RE	I200	3	R	51	8	408	3.62	30%	30%	20%	0.328	1	3400	10200	0.86	7.09

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	3	C	22	13	286	7.34	30%	30%	20%	0.167	1	4000	12000	0.90	6.32
2	MH70	3	C	25	13	325	7.02	30%	30%	20%	0.174	1	4000	12000	0.90	5.80
3	F208	4	B	48	26	1248	1.48	30%	10%	20%	0.602	2	2650	21200	0.92	9.42
	F208	1	B	48	26	1248	1.48	30%	10%	20%	0.602	2	2650	5300	0.92	2.36
	MH70	7	C	48	26	1248	3.56	30%	30%	20%	0.288	1	4000	28000	0.90	5.83
4	F208	4	B	25	18	450	2.39	30%	10%	20%	0.533	2	2650	21200	0.92	23.14
	MH70	4	C	25	18	450	5.73	30%	30%	20%	0.207	1	4000	16000	0.90	6.64
5	F208	7	C	22	18	396	6.06	30%	30%	20%						
6	MH70	33	C	124	48	5952	1.73	30%	30%	20%	0.408	1	4000	132000	0.90	8.16
	F208	5	C	124	48	5952	1.73	30%	30%	20%						
	F208	26	B	124	48	5952	0.72	30%	10%	20%	0.674	2	2650	137800	0.92	14.38
	F208	13	B	124	48	5952	0.72	30%	10%	20%	0.674	2	2650	68900	0.92	7.19
7	MH70	13	C	48	29	1392	3.32	30%	30%	20%	0.301	1	4000	52000	0.90	10.14
	F208	3	B	48	29	1392	1.38	30%	10%	20%	0.610	2	2650	15900	0.92	6.42
	F208	4	B	48	29	1392	1.38	30%	10%	20%	0.610	2	2650	21200	0.92	8.56
8	MH70	11	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	44000	0.90	10.88
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
9	F208	3	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	15900	0.92	11.73
	MH70	5	C	48	14	672	5.54	30%	30%	20%	0.212	1	4000	20000	0.90	5.69
10	MH70	10	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	40000	0.90	9.89
	F208	2	C	48	19	912	4.41	30%	30%	20%						
	F208	2	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	10600	0.92	6.14
	F208	2	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	10600	0.92	6.14
11	MH70	20	R	400	8	3200	3.19	30%	30%	20%	0.307	1	4000	80000	0.90	6.92
12	MH70	3	R	51	8	408	3.62	30%	30%	20%	0.285	1	4000	12000	0.90	7.56
13	MH70	9	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	36000	0.90	8.90
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
	F208	2	C	48	19	912	4.41	30%	30%	20%						
14	MH70	4	C	48	14	672	5.54	30%	30%	20%	0.212	1	4000	16000	0.90	4.55
	F208	2	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	10600	0.92	7.82
	F208	1	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	5300	0.92	3.91

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	MH70	9	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	36000	0.90	8.90
	F208	3	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	15900	0.92	9.21
	F208	1	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	5300	0.92	3.07
16	MH70	7	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	28000	0.90	6.92
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
17	MH70	4	C	48	14	672	5.54	30%	30%	20%	0.212	1	4000	16000	0.90	4.55
	F208	1	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	5300	0.92	3.91
	F208	2	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	10600	0.92	7.82
18	MH70	5	C	48	18	864	4.58	30%	30%	20%	0.243	1	4000	20000	0.90	5.07
	MH70	4	C	48	18	864	4.58	30%	30%	20%	0.243	1	4000	16000	0.90	4.06
	F208	4	B	48	18	864	1.91	30%	10%	20%	0.567	2	2650	21200	0.92	12.82
19	MH70	8	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	32000	0.90	7.91
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
RN	MH70	20	R	400	8	3200	3.19	30%	30%	20%	0.307	1	4000	80000	0.90	6.92
RE	MH70	3	R	51	8	408	3.62	30%	30%	20%	0.285	1	4000	12000	0.90	7.56

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	3	C	22	13	286	7.34	30%	30%	20%	0.260	1	5450	16350	0.94	13.99
2	HP70	3	C	25	13	325	7.02	30%	30%	20%	0.271	1	5450	16350	0.94	12.83
3	F208	4	B	48	26	1248	1.48	30%	10%	20%	0.602	2	2650	21200	0.92	9.42
	F208	1	B	48	26	1248	1.48	30%	10%	20%	0.602	2	2650	5300	0.92	2.36
	HP70	7	C	48	26	1248	3.56	30%	30%	20%	0.453	1	5450	38150	0.94	13.03
4	F208	4	B	25	18	450	2.39	30%	10%	20%	0.533	2	2650	21200	0.92	23.14
	HP70	4	C	25	18	450	5.73	30%	30%	20%	0.324	1	5450	21800	0.94	14.77
5	F208	7	C	22	18	396	6.06	30%	30%	20%						
6	HP70	33	C	124	48	5952	1.73	30%	30%	20%	0.623	1	5450	179850	0.94	17.71
	F208	5	C	124	48	5952	1.73	30%	30%	20%						
	F208	26	B	124	48	5952	0.72	30%	10%	20%	0.674	2	2650	137800	0.92	14.38
	F208	13	B	124	48	5952	0.72	30%	10%	20%	0.674	2	2650	68900	0.92	7.19
7	HP70	13	C	48	29	1392	3.32	30%	30%	20%	0.472	1	5450	70850	0.94	22.60
	F208	3	B	48	29	1392	1.38	30%	10%	20%	0.610	2	2650	15900	0.92	6.42
	F208	4	B	48	29	1392	1.38	30%	10%	20%	0.610	2	2650	21200	0.92	8.56
8	HP70	11	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	59950	0.94	24.37
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
9	F208	3	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	15900	0.92	11.73
	HP70	5	C	48	14	672	5.54	30%	30%	20%	0.333	1	5450	27250	0.94	12.71
10	HP70	10	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	54500	0.94	22.15
	F208	2	C	48	19	912	4.41	30%	30%	20%						
	F208	2	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	10600	0.92	6.14
	F208	2	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	10600	0.92	6.14
11	HP50	20	R	400	8	3200	3.19	30%	30%	20%	0.482	1	3600	72000	0.94	10.20
12	HP50	3	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	10800	0.94	11.18
13	HP70	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	49050	0.94	19.94
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
	F208	2	C	48	19	912	4.41	30%	30%	20%						
14	HP70	4	C	48	14	672	5.54	30%	30%	20%	0.333	1	5450	21800	0.94	10.16
	F208	2	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	10600	0.92	7.82
	F208	1	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	5300	0.92	3.91

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	HP70	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	49050	0.94	19.94
	F208	3	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	15900	0.92	9.21
	F208	1	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	5300	0.92	3.07
16	HP70	7	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	38150	0.94	15.51
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
17	HP70	4	C	48	14	672	5.54	30%	30%	20%	0.333	1	5450	21800	0.94	10.16
	F208	1	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	5300	0.92	3.91
	F208	2	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	10600	0.92	7.82
18	HP70	5	C	48	18	864	4.58	30%	30%	20%	0.383	1	5450	27250	0.94	11.37
	HP70	4	C	48	18	864	4.58	30%	30%	20%	0.383	1	5450	21800	0.94	9.09
	F208	4	B	48	18	864	1.91	30%	10%	20%	0.567	2	2650	21200	0.92	12.82
19	HP70	8	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	43600	0.94	17.72
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
RN	HP50	20	R	400	8	3200	3.19	30%	30%	20%	0.482	1	3600	72000	0.94	10.20
RE	HP50	3	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	10800	0.94	11.18

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	3	C	22	13	286	7.34	30%	30%	20%	0.167	1	4000	12000	0.90	6.32
2	MH70	3	C	25	13	325	7.02	30%	30%	20%	0.174	1	4000	12000	0.90	5.80
3	F312	4	B	48	26	1248	1.48	30%	10%	20%	0.551	3	2570	30840	0.92	12.55
	F312	1	B	48	26	1248	1.48	30%	10%	20%	0.551	3	2570	7710	0.92	3.14
	MH70	7	C	48	26	1248	3.56	30%	30%	20%	0.288	1	4000	28000	0.90	5.83
4	F312	4	B	25	18	450	2.39	30%	10%	20%	0.486	3	2570	30840	0.92	30.70
	MH70	4	C	25	18	450	5.73	30%	30%	20%	0.207	1	4000	16000	0.90	6.64
5	F312	7	C	22	18	396	6.06	30%	30%	20%						
6	MH70	33	C	124	48	5952	1.73	30%	30%	20%	0.408	1	4000	132000	0.90	8.16
	F312	5	C	124	48	5952	1.73	30%	30%	20%						
	F312	26	B	124	48	5952	0.72	30%	10%	20%	0.609	3	2570	200460	0.92	18.90
	F312	13	B	124	48	5952	0.72	30%	10%	20%	0.609	3	2570	100230	0.92	9.45
7	MH70	13	C	48	29	1392	3.32	30%	30%	20%	0.301	1	4000	52000	0.90	10.14
	F312	3	B	48	29	1392	1.38	30%	10%	20%	0.558	3	2570	23130	0.92	8.55
	F312	4	B	48	29	1392	1.38	30%	10%	20%	0.558	3	2570	30840	0.92	11.39
8	MH70	11	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	44000	0.90	10.88
	F312	4	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	30840	0.92	16.30
9	F312	3	B	48	14	672	2.31	30%	10%	20%	0.491	3	2570	23130	0.92	15.58
	MH70	5	C	48	14	672	5.54	30%	30%	20%	0.212	1	4000	20000	0.90	5.69
10	MH70	10	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	40000	0.90	9.89
	F312	2	C	48	19	912	4.41	30%	30%	20%						
	F312	2	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	15420	0.92	8.15
	F312	2	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	15420	0.92	8.15
11	MH70	20	R	400	8	3200	3.19	30%	30%	20%	0.307	1	4000	80000	0.90	6.92
12	MH70	3	R	51	8	408	3.62	30%	30%	20%	0.285	1	4000	12000	0.90	7.56
13	MH70	9	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	36000	0.90	8.90
	F312	4	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	30840	0.92	16.30
	F312	2	C	48	19	912	4.41	30%	30%	20%						
14	MH70	4	C	48	14	672	5.54	30%	30%	20%	0.212	1	4000	16000	0.90	4.55
	F312	2	B	48	14	672	2.31	30%	10%	20%	0.491	3	2570	15420	0.92	10.38
	F312	1	B	48	14	672	2.31	30%	10%	20%	0.491	3	2570	7710	0.92	5.19

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	MH70	9	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	36000	0.90	8.90
	F312	3	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	23130	0.92	12.22
	F312	1	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	7710	0.92	4.07
16	MH70	7	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	28000	0.90	6.92
	F312	4	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	30840	0.92	16.30
17	MH70	4	C	48	14	672	5.54	30%	30%	20%	0.212	1	4000	16000	0.90	4.55
	F312	1	B	48	14	672	2.31	30%	10%	20%	0.491	3	2570	7710	0.92	5.19
	F312	2	B	48	14	672	2.31	30%	10%	20%	0.491	3	2570	15420	0.92	10.38
18	MH70	5	C	48	18	864	4.58	30%	30%	20%	0.243	1	4000	20000	0.90	5.07
	MH70	4	C	48	18	864	4.58	30%	30%	20%	0.243	1	4000	16000	0.90	4.06
	F312	4	B	48	18	864	1.91	30%	10%	20%	0.518	3	2570	30840	0.92	17.04
19	MH70	8	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	32000	0.90	7.91
	F312	4	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	30840	0.92	16.30
RN	MH70	20	R	400	8	3200	3.19	30%	30%	20%	0.307	1	4000	80000	0.90	6.92
RE	MH70	3	R	51	8	408	3.62	30%	30%	20%	0.285	1	4000	12000	0.90	7.56

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	3	C	22	13	286	7.34	30%	30%	20%	0.260	1	5450	16350	0.94	13.99
2	HP70	3	C	25	13	325	7.02	30%	30%	20%	0.271	1	5450	16350	0.94	12.83
3	F312	4	B	48	26	1248	1.48	30%	10%	20%	0.551	3	2570	30840	0.92	12.55
	F312	1	B	48	26	1248	1.48	30%	10%	20%	0.551	3	2570	7710	0.92	3.14
	HP70	7	C	48	26	1248	3.56	30%	30%	20%	0.453	1	5450	38150	0.94	13.03
4	F312	4	B	25	18	450	2.39	30%	10%	20%	0.486	3	2570	30840	0.92	30.70
	HP70	4	C	25	18	450	5.73	30%	30%	20%	0.324	1	5450	21800	0.94	14.77
5	F312	7	C	22	18	396	6.06	30%	30%	20%						
6	HP70	33	C	124	48	5952	1.73	30%	30%	20%	0.623	1	5450	179850	0.94	17.71
	F312	5	C	124	48	5952	1.73	30%	30%	20%						
	F312	26	B	124	48	5952	0.72	30%	10%	20%	0.609	3	2570	200460	0.92	18.90
	F312	13	B	124	48	5952	0.72	30%	10%	20%	0.609	3	2570	100230	0.92	9.45
7	HP70	13	C	48	29	1392	3.32	30%	30%	20%	0.472	1	5450	70850	0.94	22.60
	F312	3	B	48	29	1392	1.38	30%	10%	20%	0.558	3	2570	23130	0.92	8.55
	F312	4	B	48	29	1392	1.38	30%	10%	20%	0.558	3	2570	30840	0.92	11.39
8	HP70	11	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	59950	0.94	24.37
	F312	4	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	30840	0.92	16.30
9	F312	3	B	48	14	672	2.31	30%	10%	20%	0.491	3	2570	23130	0.92	15.58
	HP70	5	C	48	14	672	5.54	30%	30%	20%	0.333	1	5450	27250	0.94	12.71
10	HP70	10	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	54500	0.94	22.15
	F312	2	C	48	19	912	4.41	30%	30%	20%						
	F312	2	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	15420	0.92	8.15
	F312	2	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	15420	0.92	8.15
11	HP50	20	R	400	8	3200	3.19	30%	30%	20%	0.482	1	3600	72000	0.94	10.20
12	HP50	3	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	10800	0.94	11.18
13	HP70	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	49050	0.94	19.94
	F312	4	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	30840	0.92	16.30
	F312	2	C	48	19	912	4.41	30%	30%	20%						
14	HP70	4	C	48	14	672	5.54	30%	30%	20%	0.333	1	5450	21800	0.94	10.16
	F312	2	B	48	14	672	2.31	30%	10%	20%	0.491	3	2570	15420	0.92	10.38
	F312	1	B	48	14	672	2.31	30%	10%	20%	0.491	3	2570	7710	0.92	5.19

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	HP70	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	49050	0.94	19.94
	F312	3	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	23130	0.92	12.22
	F312	1	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	7710	0.92	4.07
16	HP70	7	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	38150	0.94	15.51
	F312	4	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	30840	0.92	16.30
17	HP70	4	C	48	14	672	5.54	30%	30%	20%	0.333	1	5450	21800	0.94	10.16
	F312	1	B	48	14	672	2.31	30%	10%	20%	0.491	3	2570	7710	0.92	5.19
	F312	2	B	48	14	672	2.31	30%	10%	20%	0.491	3	2570	15420	0.92	10.38
18	HP70	5	C	48	18	864	4.58	30%	30%	20%	0.383	1	5450	27250	0.94	11.37
	HP70	4	C	48	18	864	4.58	30%	30%	20%	0.383	1	5450	21800	0.94	9.09
	F312	4	B	48	18	864	1.91	30%	10%	20%	0.518	3	2570	30840	0.92	17.04
19	HP70	8	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	43600	0.94	17.72
	F312	4	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	30840	0.92	16.30
RN	HP50	20	R	400	8	3200	3.19	30%	30%	20%	0.482	1	3600	72000	0.94	10.20
RE	HP50	3	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	10800	0.94	11.18

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	3	C	22	13	286	7.34	30%	30%	20%	0.260	1	3600	10800	0.94	9.24
2	HP50	3	C	25	13	325	7.02	30%	30%	20%	0.271	1	3600	10800	0.94	8.47
3	F208	4	B	48	26	1248	1.48	30%	10%	20%	0.602	2	2650	21200	0.92	9.42
	F208	1	B	48	26	1248	1.48	30%	10%	20%	0.602	2	2650	5300	0.92	2.36
	HP50	7	C	48	26	1248	3.56	30%	30%	20%	0.453	1	3600	25200	0.94	8.61
4	F208	4	B	25	18	450	2.39	30%	10%	20%	0.533	2	2650	21200	0.92	23.14
	HP50	4	C	25	18	450	5.73	30%	30%	20%	0.324	1	3600	14400	0.94	9.76
5	F208	7	C	22	18	396	6.06	30%	30%	20%						
6	HP50	33	C	124	48	5952	1.73	30%	30%	20%	0.623	1	3600	118800	0.94	11.70
	F208	5	C	124	48	5952	1.73	30%	30%	20%						
	F208	26	B	124	48	5952	0.72	30%	10%	20%	0.674	2	2650	137800	0.92	14.38
	F208	13	B	124	48	5952	0.72	30%	10%	20%	0.674	2	2650	68900	0.92	7.19
7	HP50	13	C	48	29	1392	3.32	30%	30%	20%	0.472	1	3600	46800	0.94	14.93
	F208	3	B	48	29	1392	1.38	30%	10%	20%	0.610	2	2650	15900	0.92	6.42
	F208	4	B	48	29	1392	1.38	30%	10%	20%	0.610	2	2650	21200	0.92	8.56
8	HP50	11	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	39600	0.94	16.10
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
9	F208	3	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	15900	0.92	11.73
	HP50	5	C	48	14	672	5.54	30%	30%	20%	0.333	1	3600	18000	0.94	8.39
10	HP50	10	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	36000	0.94	14.63
	F208	2	C	48	19	912	4.41	30%	30%	20%						
	F208	2	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	10600	0.92	6.14
	F208	2	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	10600	0.92	6.14
11	HP50	20	R	400	8	3200	3.19	30%	30%	20%	0.482	1	3600	72000	0.94	10.20
12	HP50	3	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	10800	0.94	11.18
13	HP50	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	32400	0.94	13.17
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
	F208	2	C	48	19	912	4.41	30%	30%	20%						
14	HP50	4	C	48	14	672	5.54	30%	30%	20%	0.333	1	3600	14400	0.94	6.71
	F208	2	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	10600	0.92	7.82
	F208	1	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	5300	0.92	3.91

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
15	HP50	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	32400	0.94	13.17
	F208	3	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	15900	0.92	9.21
	F208	1	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	5300	0.92	3.07
16	HP50	7	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	25200	0.94	10.24
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
17	HP50	4	C	48	14	672	5.54	30%	30%	20%	0.333	1	3600	14400	0.94	6.71
	F208	1	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	5300	0.92	3.91
	F208	2	B	48	14	672	2.31	30%	10%	20%	0.538	2	2650	10600	0.92	7.82
18	HP50	5	C	48	18	864	4.58	30%	30%	20%	0.383	1	3600	18000	0.94	7.51
	HP50	4	C	48	18	864	4.58	30%	30%	20%	0.383	1	3600	14400	0.94	6.01
	F208	4	B	48	18	864	1.91	30%	10%	20%	0.567	2	2650	21200	0.92	12.82
19	HP50	8	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	28800	0.94	11.71
	F208	4	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	21200	0.92	12.28
RN	HP50	20	R	400	8	3200	3.19	30%	30%	20%	0.482	1	3600	72000	0.94	10.20
RE	HP50	3	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	10800	0.94	11.18

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
2	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
3	I200	3	B	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
4	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76
	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
5	F312	7	C	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88
6	I200	47	C	2496	1	700	167.6	$1,671	0.0	$0	15.7	$246	$1,917
	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
	F312	37	B	2496	3	14000	6.6	$168	0.7	$67	12.3	$233	$467
	I200	21	B	2496	1	700	74.9	$747	0.0	$0	7.0	$110	$857
7	I200	19	C	2496	1	700	67.7	$675	0.0	$0	6.3	$100	$775
	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
	I200	3	B	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
8	I200	16	C	2496	1	700	57.1	$569	0.0	$0	5.3	$84	$653
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
9	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
10	I200	14	C	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	I200	2	B	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
11	I200	20	R	2496	1	700	71.3	$711	0.0	$0	6.7	$105	$816
12	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
13	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
14	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	3	B	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
Page Total		290						$7,952		$137		$1,599	$9,688

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
15	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
	I200	5	B	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	I200	2	B	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
16	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
	I200	9	B	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
17	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	2	B	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
18	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76
19	I200	12	C	2496	1	700	42.8	$427	0.0	$0	4.0	$63	$489
	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
RN	I200	20	R	2496	1	700	71.3	$711	0.0	$0	6.7	$105	$816
RE	I200	3	R	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
Page Total		109						$3,441		$25		$586	$4,052
Building Total		399						$11,393		$162		$2,185	$13,740

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
2	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
3	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$81
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
4	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
5	F208	7	C	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$15
6	MH70	33	C	2496	1	5250	15.7	$1,017	0.7	$119	11.0	$288	$1,424	$493
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
	F208	26	B	2496	2	14000	4.6	$65	0.5	$42	8.7	$163	$271	$196
	F208	13	B	2496	2	14000	2.3	$33	0.3	$21	4.3	$82	$136	$721
7	MH70	13	C	2496	1	5250	6.2	$401	0.3	$47	4.3	$113	$561	$214
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$32
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$81
8	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
9	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
10	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
11	MH70	20	R	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	($47)
12	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
13	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
14	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$102
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
Page Total		214						$4,078		$595		$1,650	$6,322	$3,366

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
16	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$325
17	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
18	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
19	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
RN	MH70	20	R	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	($47)
RE	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Page Total		79						$1,898		$247		$643	$2,787	$1,264
Building Total		293						$5,975		$842		$2,292	$9,110	$4,630

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
2	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
3	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$81
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
4	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
5	F208	7	C	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$15
6	HP70	33	C	2496	1	16800	4.9	$194	0.7	$123	11.0	$288	$605	$1,312
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
	F208	26	B	2496	2	14000	4.6	$65	0.5	$42	8.7	$163	$271	$196
	F208	13	B	2496	2	14000	2.3	$33	0.3	$21	4.3	$82	$136	$721
7	HP70	13	C	2496	1	16800	1.9	$76	0.3	$48	4.3	$113	$238	$537
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$32
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$81
8	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
9	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
10	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
11	HP50	20	R	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$440
12	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
13	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
14	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$102
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
Page Total		214						$972		$607		$1,650	$3,229	$6,459

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
16	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$325
17	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
18	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
19	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
RN	HP50	20	R	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$440
RE	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Page Total		79						$414		$251		$643	$1,308	$2,744
Building Total		293						$1,386		$859		$2,292	$4,537	$9,203

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
2	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
3	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$72
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
4	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
5	F312	7	C	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$0
6	MH70	33	C	2496	1	5250	15.7	$1,017	0.7	$119	11.0	$288	$1,424	$493
	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$0
	F312	26	B	2496	3	14000	4.6	$118	0.5	$47	8.7	$163	$328	$139
	F312	13	B	2496	3	14000	2.3	$59	0.3	$23	4.3	$82	$164	$693
7	MH70	13	C	2496	1	5250	6.2	$401	0.3	$47	4.3	$113	$561	$214
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$25
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$72
8	MH70	11	C	2496	1	5250	5.2	$339	0.2	$40	3.7	$96	$475	$178
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
9	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
10	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$56
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
11	MH70	20	R	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	($47)
12	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
13	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
14	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$97
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
Page Total		214						$4,257		$610		$1,650	$6,517	$3,171

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
16	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$317
17	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
18	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
19	MH70	8	C	2496	1	5250	3.8	$247	0.2	$29	2.7	$70	$345	$144
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
RN	MH70	20	R	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	($47)
RE	MH70	3	R	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	($7)
Page Total		79						$1,936		$250		$643	$2,829	$1,223
Building Total		293						$6,193		$860		$2,292	$9,346	$4,394

XI-EC

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
2	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
3	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$72
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
4	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
5	F312	7	C	2496	3	14000	1.2	$32	0.1	$13	2.3	$44	$88	$0
6	HP70	33	C	2496	1	16800	4.9	$194	0.7	$123	11.0	$288	$605	$1,312
	F312	5	C	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63	$0
	F312	26	B	2496	3	14000	4.6	$118	0.5	$47	8.7	$163	$328	$139
	F312	13	B	2496	3	14000	2.3	$59	0.3	$23	4.3	$82	$164	$693
7	HP70	13	C	2496	1	16800	1.9	$76	0.3	$48	4.3	$113	$238	$537
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$25
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$72
8	HP70	11	C	2496	1	16800	1.6	$65	0.2	$41	3.7	$96	$202	$451
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
9	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
10	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$56
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
11	HP50	20	R	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$440
12	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
13	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
14	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$97
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$13
Page Total		214						$1,152		$622		$1,650	$3,424	$6,264

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$166
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
16	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$317
17	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
18	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$25
19	HP70	8	C	2496	1	16800	1.2	$47	0.2	$30	2.7	$70	$147	$343
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$13
RN	HP50	20	R	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$440
RE	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Page Total		79						$452		$255		$643	$1,350	$2,702
Building Total		293						$1,604		$877		$2,292	$4,774	$8,966

X1-5

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
2	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
3	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$81
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
4	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
5	F208	7	C	2496	2	14000	1.2	$18	0.1	$11	2.3	$44	$73	$15
6	HP50	33	C	2496	1	16800	4.9	$213	0.7	$119	11.0	$288	$620	$1,298
	F208	5	C	2496	2	14000	0.9	$13	0.1	$8	1.7	$31	$52	$11
	F208	26	B	2496	2	14000	4.6	$65	0.5	$42	8.7	$163	$271	$196
	F208	13	B	2496	2	14000	2.3	$33	0.3	$21	4.3	$82	$136	$721
7	HP50	13	C	2496	1	16800	1.9	$84	0.3	$47	4.3	$113	$244	$531
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$32
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$81
8	HP50	11	C	2496	1	16800	1.6	$71	0.2	$40	3.7	$96	$207	$446
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
9	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
10	HP50	10	C	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$383
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$61
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
11	HP50	20	R	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$440
12	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
13	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
14	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$102
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$15
Page Total		214						$1,030		$595		$1,650	$3,275	$6,413

XI-53

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-14
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
15	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$173
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
16	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$325
17	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
18	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$34
19	HP50	8	C	2496	1	16800	1.2	$52	0.2	$29	2.7	$70	$150	$339
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$21
RN	HP50	20	R	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$440
RE	HP50	3	R	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$66
Page Total		79						$435		$247		$643	$1,325	$2,727
Building Total		293						$1,465		$842		$2,292	$4,600	$9,140

X1-54

11/8/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Existing Fixtures												Upgrade Fixtures					Baseline Total							
Room No.	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	15	11-0	C	31	300	28	200	3.00	$385	$0	$213	I200	6	200	1.20	$4,252	I200	21	48	52	7,488	2,995	10,483	$4,850
	F312	2	11-0	C	31	300	28	132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
2	I200	19	11-0	C	22	74	7	200	3.80	$488	$0	$269	I200	8	200	1.60	$5,670	I200	27	48	52	9,485	3,994	13,478	$6,427
3	I200	10	11-0	C	36	97	9	200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
4	I200	9	11-0	C	24	200	19	200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
	F212	6	10-0	B	24	200	19	82	0.49	$224	$22	$89	F212	3	82	0.25	$2,214	F212	9	48	52	1,228	614	1,842	$2,548
5	I200	9	11-0	C	34	150	14	200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
	F212	2	11-0	C	34	150	14	82	0.16	$75	$7	$30	F212	0	82	0.00	$0	F212	2	48	52	409	0	409	$111
6	I200	9	11-0	C	32	200	19	200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
7	I200	10	11-0	C	32	100	9	200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
8	I200	69	9-6	C				200	13.80	$1,773	$0	$978	I200	28	200	5.60	$19,844	I200	97	48	52	34,445	13,978	48,422	$22,594
	F312	3	11-0	C	15	160	15	132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
	F212	10	11-0	C	32	340	32	82	0.82	$373	$36	$148	F212	0	82	0.00	$0	F212	10	48	52	2,047	0	2,047	$557
9	I200	18	11-0	R				200	3.60	$462	$0	$255	I200	0	200	0.00	$0	I200	18	48	52	8,986	0	8,986	$718
10	I200	18	11-0	R				200	3.60	$462	$0	$255	I200	0	200	0.00	$0	I200	18	48	52	8,986	0	8,986	$718
11	I200	7	11-0	R				200	1.40	$180	$0	$99	I200	0	200	0.00	$0	I200	7	48	52	3,494	0	3,494	$279
	F212	2	9-0	R				82	0.16	$75	$7	$30	F212	0	82	0.00	$0	F212	2	48	52	409	0	409	$111
12	I200	2	9-0	C	20	245	23	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	3	9-0	C	34	319	30	132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
13	F312	4	9-0	C	30	390	36	132	0.53	$177	$18	$56	F312	0	132	0.00	$0	F312	4	48	52	1,318	0	1,318	$251
14	I200	4	9-0	C	36	212	20	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
15	I200	4	9-0	C	32	420	39	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
16	I200	1	9-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
17	I200	1	9-0	R				200	0.20	$26	$0	$14	I200	0	200	0.00	$0	I200	1	48	52	499	0	499	$40
New Panel																	$1,500								$1,500
Building Total		237							44.22	$6,545	$126	$3,368		71		13.85	$51,906					110,383	34,560	144,943	$61,945

X1-55

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	21	C	300	28	200	4.20	$4,850	MH70	15		89	1.34	$8,261	48	52	10,483	3,332	7,151	($3,411)
	F312	2	C	300	28	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
2	I200	27	C	74	7	200	5.40	$6,427	MH70	14		89	1.25	$7,711	48	52	13,478	3,110	10,368	($1,284)
3	I200	14	C	97	9	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
4	I200	13	C	200	19	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
	F212	9	B	200	19	82	0.74	$2,548	F208	6		62	0.37	$4,178	48	52	1,842	929	914	($1,630)
5	I200	13	C	150	14	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
	F212	2	C	150	14	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
6	I200	13	C	200	19	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
7	I200	14	C	100	9	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
8	I200	97	C			200	19.40	$22,594	MH70	69		89	6.14	$38,002	48	52	48,422	15,328	33,094	($15,408)
	F312	3	C	160	15	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	F212	10	C	340	32	82	0.82	$557	F208	10		62	0.62	$6,964	48	52	2,047	1,548	499	($6,406)
9	I200	18	R			200	3.60	$718	MH70	18		89	1.60	$9,914	48	52	8,986	3,999	4,987	($9,196)
10	I200	18	R			200	3.60	$718	MH70	18		89	1.60	$9,914	48	52	8,986	3,999	4,987	($9,196)
11	I200	7	R			200	1.40	$279	MH70	4		89	0.36	$2,203	48	52	3,494	889	2,606	($1,924)
	F212	2	R			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
12	I200	3	C	245	23	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	3	C	319	30	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
13	F312	4	C	390	36	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
14	I200	6	C	212	20	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
15	I200	6	C	420	39	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
16	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
17	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
New Panel								$1,500												$1,500
Building Total		308					58.07	$61,945		229			19.52	$130,783			144,943	48,714	96,228	($68,838)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	21	C	300	28	200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,707	6,777	($4,404)
	F312	2	C	300	28	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
2	I200	27	C	74	7	200	5.40	$6,427	HP70	14		99	1.39	$8,637	48	52	13,478	3,459	10,019	($2,210)
3	I200	14	C	97	9	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
4	I200	13	C	200	19	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
	F212	9	B	200	19	82	0.74	$2,548	F208	6		62	0.37	$4,178	48	52	1,842	929	914	($1,630)
5	I200	13	C	150	14	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
	F212	2	C	150	14	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
6	I200	13	C	200	19	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
7	I200	14	C	100	9	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
8	I200	97	C			200	19.40	$22,594	HP70	69		99	6.83	$42,568	48	52	48,422	17,050	31,372	($19,974)
	F312	3	C	160	15	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	F212	10	C	340	32	82	0.82	$557	F208	10		62	0.62	$6,964	48	52	2,047	1,548	499	($6,406)
9	I200	18	R			200	3.60	$718	HP50	18		58	1.04	$10,860	48	52	8,986	2,606	6,380	($10,142)
10	I200	18	R			200	3.60	$718	HP50	18		58	1.04	$10,860	48	52	8,986	2,606	6,380	($10,142)
11	I200	7	R			200	1.40	$279	HP50	4		58	0.23	$2,413	48	52	3,494	579	2,915	($2,134)
	F212	2	R			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
12	I200	3	C	245	23	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	3	C	319	30	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
13	F312	4	C	390	36	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
14	I200	6	C	212	20	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
15	I200	6	C	420	39	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
16	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
17	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
New Panel								$1,500												$1,500
Building Total		308					58.07	$61,945		229			19.81	$143,260			144,943	49,436	95,507	($81,315)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	21	C	300	28	200	4.20	$4,850	MH70	15		89	1.34	$8,261	48	52	10,483	3,332	7,151	($3,411)
	F312	2	C	300	28	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
2	I200	27	C	74	7	200	5.40	$6,427	MH70	14		89	1.25	$7,711	48	52	13,478	3,110	10,368	($1,284)
3	I200	14	C	97	9	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
4	I200	13	C	200	19	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
	F212	9	B	200	19	82	0.74	$2,548	F312	6		132	0.79	$4,178	48	52	1,842	1,977	(135)	($1,630)
5	I200	13	C	150	14	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
	F212	2	C	150	14	82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
6	I200	13	C	200	19	200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
7	I200	14	C	100	9	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
8	I200	97	C			200	19.40	$22,594	MH70	69		89	6.14	$38,002	48	52	48,422	15,328	33,094	($15,408)
	F312	3	C	160	15	132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
	F212	10	C	340	32	82	0.82	$557	F212	0		82	0.82	$557	48	52	2,047	2,047	0	$0
9	I200	18	R			200	3.60	$718	MH70	18		89	1.60	$9,914	48	52	8,986	3,999	4,987	($9,196)
10	I200	18	R			200	3.60	$718	MH70	18		89	1.60	$9,914	48	52	8,986	3,999	4,987	($9,196)
11	I200	7	R			200	1.40	$279	MH70	4		89	0.36	$2,203	48	52	3,494	889	2,606	($1,924)
	F212	2	R			82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
12	I200	3	C	245	23	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	3	C	319	30	132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
13	F312	4	C	390	36	132	0.53	$251	F312	0		132	0.53	$251	48	52	1,318	1,318	0	$0
14	I200	6	C	212	20	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
15	I200	6	C	420	39	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
16	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
17	I200	1	R			200	0.20	$40	MH70	1		89	0.09	$551	48	52	499	222	277	($511)
New Panel								$1,500												$1,500
Building Total		308					58.07	$61,945		203			21.06	$114,210			144,943	52,558	92,384	($52,266)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	21	C	300	28	200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,707	6,777	($4,404)
	F312	2	C	300	28	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
2	I200	27	C	74	7	200	5.40	$6,427	HP70	14		99	1.39	$8,637	48	52	13,478	3,459	10,019	($2,210)
3	I200	14	C	97	9	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
4	I200	13	C	200	19	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
	F212	9	B	200	19	82	0.74	$2,548	F312	6		132	0.79	$4,178	48	52	1,842	1,977	(135)	($1,630)
5	I200	13	C	150	14	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
	F212	2	C	150	14	82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
6	I200	13	C	200	19	200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
7	I200	14	C	100	9	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
8	I200	97	C			200	19.40	$22,594	HP70	69		99	6.83	$42,568	48	52	48,422	17,050	31,372	($19,974)
	F312	3	C	160	15	132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
	F212	10	C	340	32	82	0.82	$557	F212	0		82	0.82	$557	48	52	2,047	2,047	0	$0
9	I200	18	R			200	3.60	$718	HP50	18		58	1.04	$10,860	48	52	8,986	2,606	6,380	($10,142)
10	I200	18	R			200	3.60	$718	HP50	18		58	1.04	$10,860	48	52	8,986	2,606	6,380	($10,142)
11	I200	7	R			200	1.40	$279	HP50	4		58	0.23	$2,413	48	52	3,494	579	2,915	($2,134)
	F212	2	R			82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
12	I200	3	C	245	23	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	3	C	319	30	132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
13	F312	4	C	390	36	132	0.53	$251	F312	0		132	0.53	$251	48	52	1,318	1,318	0	$0
14	I200	6	C	212	20	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
15	I200	6	C	420	39	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
16	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
17	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
New Panel								$1,500												$1,500
Building Total		308					58.07	$61,945		203			21.35	$126,687			144,943	53,280	91,663	($64,743)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	21	C	300	28	200	4.20	$4,850	HP50	15		58	0.87	$9,050	48	52	10,483	2,172	8,312	($4,199)
	F312	2	C	300	28	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
2	I200	27	C	74	7	200	5.40	$6,427	HP50	14		58	0.81	$8,446	48	52	13,478	2,027	11,452	($2,019)
3	I200	14	C	97	9	200	2.80	$3,233	HP50	10		58	0.58	$6,033	48	52	6,989	1,448	5,541	($2,800)
4	I200	13	C	200	19	200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
	F212	9	B	200	19	82	0.74	$2,548	F208	6		62	0.37	$4,178	48	52	1,842	929	914	($1,630)
5	I200	13	C	150	14	200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
	F212	2	C	150	14	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
6	I200	13	C	200	19	200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
7	I200	14	C	100	9	200	2.80	$3,233	HP50	10		58	0.58	$6,033	48	52	6,989	1,448	5,541	($2,800)
8	I200	97	C			200	19.40	$22,594	HP50	69		58	4.00	$41,628	48	52	48,422	9,989	38,433	($19,034)
	F312	3	C	160	15	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
	F212	10	C	340	32	82	0.82	$557	F208	10		62	0.62	$6,964	48	52	2,047	1,548	499	($6,406)
9	I200	18	R			200	3.60	$718	HP50	18		58	1.04	$10,860	48	52	8,986	2,606	6,380	($10,142)
10	I200	18	R			200	3.60	$718	HP50	18		58	1.04	$10,860	48	52	8,986	2,606	6,380	($10,142)
11	I200	7	R			200	1.40	$279	HP50	4		58	0.23	$2,413	48	52	3,494	579	2,915	($2,134)
	F212	2	R			82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
12	I200	3	C	245	23	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	3	C	319	30	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
13	F312	4	C	390	36	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
14	I200	6	C	212	20	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
15	I200	6	C	420	39	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
16	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
17	I200	1	R			200	0.20	$40	HP50	1		58	0.06	$603	48	52	499	145	354	($563)
New Panel								$1,500												$1,500
Building Total		308					58.07	$61,945		229			13.41	$141,135			144,943	33,471	111,471	($79,191)

XI-60

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	21	C	48	36	1728	2.92	30%	30%	20%	0.366	1	3400	71400	0.86	13.07
	F312	2	C	48	36	1728	2.92	30%	30%	20%						
2	I200	27	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	91800	0.86	25.32
3	I200	14	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	47600	0.86	13.13
4	I200	13	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	44200	0.86	12.19
	F212	9	B	48	19	912	1.84	30%	10%	20%	0.573	2	2570	46260	0.92	26.79
5	I200	13	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	44200	0.86	12.19
	F212	2	C	48	19	912	4.41	30%	30%	20%						
6	I200	13	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	44200	0.86	12.19
7	I200	14	C	48	19	912	4.41	30%	30%	20%	0.291	1	3400	47600	0.86	13.13
8	I200	97	C	140	48	6720	1.68	30%	30%	20%	0.549	1	3400	329800	0.86	23.29
	F312	3	C	140	48	6720	1.68	30%	30%	20%						
	F212	10	C	140	48	6720	1.68	30%	30%	20%						
9	I200	18	R	342	8	2736	3.20	30%	30%	20%	0.350	1	3400	61200	0.86	6.77
10	I200	18	R	342	11	3762	2.35	30%	30%	20%	0.403	1	3400	61200	0.86	5.67
11	I200	7	R	51	8	408	3.62	30%	30%	20%	0.328	1	3400	23800	0.86	16.54
	F212	2	R	51	8	408	3.62	30%	30%	20%						
12	I200	3	C	18	12	216	8.33	30%	30%	20%	0.177	1	3400	10200	0.86	7.23
	F312	3	C	18	12	216	8.33	30%	30%	20%						
13	F312	4	C	19	19	361	6.32	30%	30%	20%						
14	I200	6	C	28	13	364	6.76	30%	30%	20%	0.215	1	3400	20400	0.86	10.42
15	I200	6	C	28	24	672	4.64	30%	30%	20%	0.281	1	3400	20400	0.86	7.37
16	I200	2	C	19	6	114	13.16	30%	30%	20%	0.140	1	3400	6800	0.86	7.22
17	I200	1	R	51	8	408	3.62	30%	30%	20%	0.328	1	3400	3400	0.86	2.36

X-11

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	15	C	48	36	1728	2.92	30%	30%	20%	0.322	1	4000	60000	0.90	10.09
	F208	2	C	48	36	1728	2.92	30%	30%	20%						
2	MH70	14	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	56000	0.90	13.85
3	MH70	10	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	40000	0.90	9.89
4	MH70	9	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	36000	0.90	8.90
	F208	6	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	31800	0.92	18.41
5	MH70	9	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	36000	0.90	8.90
	F208	2	C	48	19	912	4.41	30%	30%	20%						
6	MH70	9	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	36000	0.90	8.90
7	MH70	10	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	40000	0.90	9.89
8	MH70	69	C	140	48	6720	1.68	30%	30%	20%	0.412	1	4000	276000	0.90	15.26
	F208	3	C	140	48	6720	1.68	30%	30%	20%						
	F208	10	C	140	48	6720	1.68	30%	30%	20%						
9	MH70	18	R	342	8	2736	3.20	30%	30%	20%	0.307	1	4000	72000	0.90	7.29
10	MH70	18	R	342	11	3762	2.35	30%	30%	20%	0.359	1	4000	72000	0.90	6.20
11	MH70	4	R	51	8	408	3.62	30%	30%	20%	0.285	1	4000	16000	0.90	10.08
	F208	2	R	51	8	408	3.62	30%	30%	20%						
12	MH70	2	C	18	12	216	8.33	30%	30%	20%	0.147	1	4000	8000	0.90	4.91
	F208	3	C	18	12	216	8.33	30%	30%	20%						
13	F208	4	C	19	19	361	6.32	30%	30%	20%						
14	MH70	4	C	28	13	364	6.76	30%	30%	20%	0.180	1	4000	16000	0.90	7.14
15	MH70	4	C	28	24	672	4.64	30%	30%	20%	0.241	1	4000	16000	0.90	5.18
16	MH70	1	C	19	6	114	13.16	30%	30%	20%	0.115	1	4000	4000	0.90	3.64
17	MH70	1	R	51	8	408	3.62	30%	30%	20%	0.285	1	4000	4000	0.90	2.52

XI-(

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	15	C	48	36	1728	2.92	30%	30%	20%	0.505	1	5450	81750	0.94	22.48
	F208	2	C	48	36	1728	2.92	30%	30%	20%						
2	HP70	14	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	76300	0.94	31.01
3	HP70	10	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	54500	0.94	22.15
4	HP70	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	49050	0.94	19.94
	F208	6	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	31800	0.92	18.41
5	HP70	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	49050	0.94	19.94
	F208	2	C	48	19	912	4.41	30%	30%	20%						
6	HP70	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	49050	0.94	19.94
7	HP70	10	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	54500	0.94	22.15
8	HP70	69	C	140	48	6720	1.68	30%	30%	20%	0.628	1	5450	376050	0.94	33.07
	F208	3	C	140	48	6720	1.68	30%	30%	20%						
	F208	10	C	140	48	6720	1.68	30%	30%	20%						
9	HP50	18	R	342	8	2736	3.20	30%	30%	20%	0.481	1	3600	64800	0.94	10.72
10	HP50	18	R	342	11	3762	2.35	30%	30%	20%	0.558	1	3600	64800	0.94	9.04
11	HP50	4	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	14400	0.94	14.91
	F208	2	R	51	8	408	3.62	30%	30%	20%						
12	HP70	2	C	18	12	216	8.33	30%	30%	20%	0.228	1	5450	10900	0.94	10.83
	F208	3	C	18	12	216	8.33	30%	30%	20%						
13	F208	4	C	19	19	361	6.32	30%	30%	20%						
14	HP70	4	C	28	13	364	6.76	30%	30%	20%	0.282	1	5450	21800	0.94	15.89
15	HP70	4	C	28	24	672	4.64	30%	30%	20%	0.379	1	5450	21800	0.94	11.57
16	HP70	1	C	19	6	114	13.16	30%	30%	20%	0.178	1	5450	5450	0.94	8.01
17	HP50	1	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	3600	0.94	3.73

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	15	C	48	36	1728	2.92	30%	30%	20%	0.322	1	4000	60000	0.90	10.09
	F312	2	C	48	36	1728	2.92	30%	30%	20%						
2	MH70	14	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	56000	0.90	13.85
3	MH70	10	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	40000	0.90	9.89
4	MH70	9	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	36000	0.90	8.90
	F312	6	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	46260	0.92	24.45
5	MH70	9	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	36000	0.90	8.90
	F212	2	C	48	19	912	4.41	30%	30%	20%						
6	MH70	9	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	36000	0.90	8.90
7	MH70	10	C	48	19	912	4.41	30%	30%	20%	0.250	1	4000	40000	0.90	9.89
8	MH70	69	C	140	48	6720	1.68	30%	30%	20%	0.412	1	4000	276000	0.90	15.26
	F312	3	C	140	48	6720	1.68	30%	30%	20%						
	F212	10	C	140	48	6720	1.68	30%	30%	20%						
9	MH70	18	R	342	8	2736	3.20	30%	30%	20%	0.307	1	4000	72000	0.90	7.29
10	MH70	18	R	342	11	3762	2.35	30%	30%	20%	0.359	1	4000	72000	0.90	6.20
11	MH70	4	R	51	8	408	3.62	30%	30%	20%	0.285	1	4000	16000	0.90	10.08
	F212	2	R	51	8	408	3.62	30%	30%	20%						
12	MH70	2	C	18	12	216	8.33	30%	30%	20%	0.147	1	4000	8000	0.90	4.91
	F312	3	C	18	12	216	8.33	30%	30%	20%						
13	F312	4	C	19	19	361	6.32	30%	30%	20%						
14	MH70	4	C	28	13	364	6.76	30%	30%	20%	0.180	1	4000	16000	0.90	7.14
15	MH70	4	C	28	24	672	4.64	30%	30%	20%	0.241	1	4000	16000	0.90	5.18
16	MH70	1	C	19	6	114	13.16	30%	30%	20%	0.115	1	4000	4000	0.90	3.64
17	MH70	1	R	51	8	408	3.62	30%	30%	20%	0.285	1	4000	4000	0.90	2.52

X1-C4

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	15	C	48	36	1728	2.92	30%	30%	20%	0.505	1	5450	81750	0.94	22.48
	F312	2	C	48	36	1728	2.92	30%	30%	20%						
2	HP70	14	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	76300	0.94	31.01
3	HP70	10	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	54500	0.94	22.15
4	HP70	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	49050	0.94	19.94
	F312	6	B	48	19	912	1.84	30%	10%	20%	0.523	3	2570	46260	0.92	24.45
5	HP70	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	49050	0.94	19.94
	F212	2	C	48	19	912	4.41	30%	30%	20%						
6	HP70	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	49050	0.94	19.94
7	HP70	10	C	48	19	912	4.41	30%	30%	20%	0.394	1	5450	54500	0.94	22.15
8	HP70	69	C	140	48	6720	1.68	30%	30%	20%	0.628	1	5450	376050	0.94	33.07
	F312	3	C	140	48	6720	1.68	30%	30%	20%						
	F212	10	C	140	48	6720	1.68	30%	30%	20%						
9	HP50	18	R	342	8	2736	3.20	30%	30%	20%	0.481	1	3600	64800	0.94	10.72
10	HP50	18	R	342	11	3762	2.35	30%	30%	20%	0.558	1	3600	64800	0.94	9.04
11	HP50	4	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	14400	0.94	14.91
	F212	2	R	51	8	408	3.62	30%	30%	20%						
12	HP70	2	C	18	12	216	8.33	30%	30%	20%	0.228	1	5450	10900	0.94	10.83
	F312	3	C	18	12	216	8.33	30%	30%	20%						
13	F312	4	C	19	19	361	6.32	30%	30%	20%						
14	HP70	4	C	28	13	364	6.76	30%	30%	20%	0.282	1	5450	21800	0.94	15.89
15	HP70	4	C	28	24	672	4.64	30%	30%	20%	0.379	1	5450	21800	0.94	11.57
16	HP70	1	C	19	6	114	13.16	30%	30%	20%	0.178	1	5450	5450	0.94	8.01
17	HP50	1	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	3600	0.94	3.73

X1-11

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	15	C	48	36	1728	2.92	30%	30%	20%	0.505	1	3600	54000	0.94	14.85
	F208	2	C	48	36	1728	2.92	30%	30%	20%						
2	HP50	14	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	50400	0.94	20.49
3	HP50	10	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	36000	0.94	14.63
4	HP50	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	32400	0.94	13.17
	F208	6	B	48	19	912	1.84	30%	10%	20%	0.573	2	2650	31800	0.92	18.41
5	HP50	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	32400	0.94	13.17
	F208	2	C	48	19	912	4.41	30%	30%	20%						
6	HP50	9	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	32400	0.94	13.17
7	HP50	10	C	48	19	912	4.41	30%	30%	20%	0.394	1	3600	36000	0.94	14.63
8	HP50	69	C	140	48	6720	1.68	30%	30%	20%	0.628	1	3600	248400	0.94	21.84
	F208	3	C	140	48	6720	1.68	30%	30%	20%						
	F208	10	C	140	48	6720	1.68	30%	30%	20%						
9	HP50	18	R	342	8	2736	3.20	30%	30%	20%	0.481	1	3600	64800	0.94	10.72
10	HP50	18	R	342	11	3762	2.35	30%	30%	20%	0.558	1	3600	64800	0.94	9.04
11	HP50	4	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	14400	0.94	14.91
	F208	2	R	51	8	408	3.62	30%	30%	20%						
12	HP50	2	C	18	12	216	8.33	30%	30%	20%	0.228	1	3600	7200	0.94	7.15
	F208	3	C	18	12	216	8.33	30%	30%	20%						
13	F208	4	C	19	19	361	6.32	30%	30%	20%						
14	HP50	4	C	28	13	364	6.76	30%	30%	20%	0.282	1	3600	14400	0.94	10.50
15	HP50	4	C	28	24	672	4.64	30%	30%	20%	0.379	1	3600	14400	0.94	7.64
16	HP50	1	C	19	6	114	13.16	30%	30%	20%	0.178	1	3600	3600	0.94	5.29
17	HP50	1	R	51	8	408	3.62	30%	30%	20%	0.449	1	3600	3600	0.94	3.73

A1-17

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	21	C	2496	1	700	74.9	$747	0.0	$0	7.0	$110	$857
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
2	I200	27	C	2496	1	700	96.3	$960	0.0	$0	9.0	$141	$1,101
3	I200	14	C	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
4	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
	F212	9	B	2496	2	14000	1.6	$30	0.2	$13	3.0	$57	$99
5	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
6	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
7	I200	14	C	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
8	I200	97	C	2496	1	700	345.9	$3,448	0.0	$0	32.3	$508	$3,957
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
	F212	10	C	2496	2	14000	1.8	$33	0.2	$14	3.3	$63	$110
9	I200	18	R	2496	1	700	64.2	$640	0.0	$0	6.0	$94	$734
10	I200	18	R	2496	1	700	64.2	$640	0.0	$0	6.0	$94	$734
11	I200	7	R	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	F212	2	R	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
12	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
13	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50
14	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
15	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
16	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
17	I200	1	R	2496	1	700	3.6	$36	0.0	$0	0.3	$5	$41
Building Total		308						$9,835		$55		$1,651	$11,541

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
2	MH70	14	C	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	$497
3	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
4	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$37
5	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
6	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
7	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
8	MH70	69	C	2496	1	5250	32.8	$2,127	1.4	$248	23.0	$602	$2,977	$979
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	F208	10	C	2496	2	14000	1.8	$25	0.2	$16	3.3	$63	$104	$6
9	MH70	18	R	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	($43)
10	MH70	18	R	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	($43)
11	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$113
	F208	2	R	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
12	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
13	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
14	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
15	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
16	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
17	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
Building Total		229						$6,154		$761		$1,919	$8,835	$2,706

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
2	HP70	14	C	2496	1	16800	2.1	$82	0.3	$52	4.7	$122	$257	$845
3	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
4	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$37
5	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
6	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
7	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
8	HP70	69	C	2496	1	16800	10.3	$406	1.4	$257	23.0	$602	$1,264	$2,692
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	F208	10	C	2496	2	14000	1.8	$25	0.2	$16	3.3	$63	$104	$6
9	HP50	18	R	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$396
10	HP50	18	R	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$396
11	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$210
	F208	2	R	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
12	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
13	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
14	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
15	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
16	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
17	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
Building Total		229						$1,263		$780		$1,919	$3,962	$7,579

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
2	MH70	14	C	2496	1	5250	6.7	$432	0.3	$50	4.7	$122	$604	$497
3	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
4	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$23
5	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
6	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
7	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
8	MH70	69	C	2496	1	5250	32.8	$2,127	1.4	$248	23.0	$602	$2,977	$979
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
	F212	10	C	2496	2	14000	1.8	$33	0.2	$14	3.3	$63	$110	$0
9	MH70	18	R	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	($43)
10	MH70	18	R	2496	1	5250	8.6	$555	0.4	$65	6.0	$157	$777	($43)
11	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$113
	F212	2	R	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
12	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
13	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$0
14	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
15	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
16	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
17	MH70	1	R	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	($2)
Building Total		229						$6,202		$762		$1,919	$8,882	$2,658

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
2	HP70	14	C	2496	1	16800	2.1	$82	0.3	$52	4.7	$122	$257	$845
3	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
4	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
	F312	6	B	2496	3	14000	1.1	$27	0.1	$11	2.0	$38	$76	$23
5	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
6	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
7	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
8	HP70	69	C	2496	1	16800	10.3	$406	1.4	$257	23.0	$602	$1,264	$2,692
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
	F212	10	C	2496	2	14000	1.8	$33	0.2	$14	3.3	$63	$110	$0
9	HP50	18	R	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$396
10	HP50	18	R	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$396
11	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$210
	F212	2	R	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
12	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
13	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$0
14	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
15	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
16	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
17	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
Building Total		229						$1,310		$780		$1,919	$4,010	$7,531

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-18
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	15	C	2496	1	16800	2.2	$97	0.3	$54	5.0	$131	$282	$575
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
2	HP50	14	C	2496	1	16800	2.1	$90	0.3	$50	4.7	$122	$263	$838
3	HP50	10	C	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$383
4	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
	F208	6	B	2496	2	14000	1.1	$15	0.1	$10	2.0	$38	$63	$37
5	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
6	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
7	HP50	10	C	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$383
8	HP50	69	C	2496	1	16800	10.3	$445	1.4	$248	23.0	$602	$1,295	$2,661
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
	F208	10	C	2496	2	14000	1.8	$25	0.2	$16	3.3	$63	$104	$6
9	HP50	18	R	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$396
10	HP50	18	R	2496	1	16800	2.7	$116	0.4	$65	6.0	$157	$338	$396
11	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$210
	F208	2	R	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
12	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
13	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
14	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
15	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
16	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
17	HP50	1	R	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$22
Building Total		229						$1,352		$761		$1,919	$4,032	$7,508

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures											Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	5	8-0	C				200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	F312	2	8-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	F212	1	8-0	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
2	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
3	I200	1	8-0	C	29	62	6	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
4	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
5	I200	1	8-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
6	I200	1	8-0	C	31	175	16	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
7	I200	2		C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
8	I200	2	8-0	C	30	318	30	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	1	8-0	C				132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
RC	I200	5	8-0	R				200	1.00	$128	$0	$71	I200	0	200	0.00	$0	I200	5	48	52	2,496	0	2,496	$199
New Panel																	$1,500								$1,500
Building Total		23							4.28	$658	$17	$326		9		1.80	$7,878					10,678	4,493	15,171	$8,880

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
2	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
3	I200	2	C	62	6	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
4	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
5	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
6	I200	2	C	175	16	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
7	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
8	I200	3	C	318	30	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
RC	I200	5	R			200	1.00	$199	MH70	5		89	0.45	$2,754	48	52	2,496	1,111	1,385	($2,554)
New Panel								$1,500												$1,500
Building Total		32					6.08	$8,880		23			1.94	$13,250			15,171	4,840	10,331	($4,370)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
2	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
3	I200	2	C	62	6	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
4	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
5	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
6	I200	2	C	175	16	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
7	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
8	I200	3	C	318	30	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
RC	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
New Panel								$1,500												$1,500
Building Total		32					6.08	$8,880		23			1.92	$14,439			15,171	4,802	10,368	($5,559)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	7	C			200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
2	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
3	I200	2	C	62	6	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
4	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
5	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
6	I200	2	C	175	16	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
7	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
8	I200	3	C	318	30	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
RC	I200	5	R			200	1.00	$199	MH70	5		89	0.45	$2,754	48	52	2,496	1,111	1,385	($2,554)
New Panel								$1,500												$1,500
Building Total		32					6.08	$8,880		19			2.17	$10,708			15,171	5,414	9,757	($1,829)

X1-77

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	7	C			200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
2	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
3	I200	2	C	62	6	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
4	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
5	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
6	I200	2	C	175	16	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
7	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
8	I200	3	C	318	30	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	1	C			132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
RC	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
New Panel								$1,500												$1,500
Building Total		32					6.08	$8,880		19			2.15	$11,897			15,171	5,376	9,794	($3,018)

X1-78

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	7	C			200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
2	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
3	I200	2	C	62	6	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
4	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
5	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
6	I200	2	C	175	16	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
7	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
8	I200	3	C	318	30	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	1	C			132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
RC	I200	5	R			200	1.00	$199	HP50	5		58	0.29	$3,017	48	52	2,496	724	1,772	($2,817)
New Panel								$1,500												$1,500
Building Total		32					6.08	$8,880		23			1.35	$14,248			15,171	3,370	11,801	($5,369)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	7	C	96	10	960	6.63	30%	30%	20%	0.218	1	3400	23800	0.86	4.67
	F312	2	C	96	10	960	6.63	30%	30%	20%						
	F212	1	C	96	10	960	6.63	30%	30%	20%						
2	I200	2	C	11	8	88	12.95	30%	30%	20%	0.140	1	3400	6800	0.86	9.35
3	I200	2	C	11	8	88	12.95	30%	30%	20%	0.140	1	3400	6800	0.86	9.35
4	I200	2	C	11	8	88	12.95	30%	30%	20%	0.140	1	3400	6800	0.86	9.35
5	I200	2	C	11	8	88	12.95	30%	30%	20%	0.140	1	3400	6800	0.86	9.35
6	I200	2	C	11	8	88	12.95	30%	30%	20%	0.140	1	3400	6800	0.86	9.35
7	I200	3	C	11	8	88	12.95	30%	30%	20%	0.140	1	3400	10200	0.86	14.03
8	I200	3	C	11	8	88	12.95	30%	30%	20%	0.140	1	3400	10200	0.86	14.03
	F312	1	C	11	8	88	12.95	30%	30%	20%						
RC	I200	5	R	75	8	600	3.46	30%	30%	20%	0.337	1	3400	17000	0.86	8.25

X1-80

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	5	C	96	10	960	6.63	30%	30%	20%	0.183	1	4000	20000	0.90	3.44
	F208	2	C	96	10	960	6.63	30%	30%	20%						
	F208	1	C	96	10	960	6.63	30%	30%	20%						
2	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
3	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
4	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
5	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
6	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
7	MH70	2	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	8000	0.90	9.43
8	MH70	2	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	8000	0.90	9.43
	F208	1	C	11	8	88	12.95	30%	30%	20%						
RC	MH70	5	R	75	8	600	3.46	30%	30%	20%	0.294	1	4000	20000	0.90	8.84

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	5	C	96	10	960	6.63	30%	30%	20%	0.287	1	5450	27250	0.94	7.67
	F208	2	C	96	10	960	6.63	30%	30%	20%						
	F208	1	C	96	10	960	6.63	30%	30%	20%						
2	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
3	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
4	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
5	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
6	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
7	HP70	2	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	10900	0.94	20.74
8	HP70	2	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	10900	0.94	20.74
	F208	1	C	11	8	88	12.95	30%	30%	20%						
RC	HP50	5	R	75	8	600	3.46	30%	30%	20%	0.461	1	3600	18000	0.94	13.01

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	5	C	96	10	960	6.63	30%	30%	20%	0.183	1	4000	20000	0.90	3.44
	F312	2	C	96	10	960	6.63	30%	30%	20%						
	F212	1	C	96	10	960	6.63	30%	30%	20%						
2	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
3	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
4	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
5	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
6	MH70	1	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	4000	0.90	4.72
7	MH70	2	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	8000	0.90	9.43
8	MH70	2	C	11	8	88	12.95	30%	30%	20%	0.115	1	4000	8000	0.90	9.43
	F312	1	C	11	8	88	12.95	30%	30%	20%						
RC	MH70	5	R	75	8	600	3.46	30%	30%	20%	0.294	1	4000	20000	0.90	8.84

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	5	C	96	10	960	6.63	30%	30%	20%	0.287	1	5450	27250	0.94	7.67
	F312	2	C	96	10	960	6.63	30%	30%	20%						
	F212	1	C	96	10	960	6.63	30%	30%	20%						
2	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
3	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
4	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
5	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
6	HP70	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	5450	0.94	10.37
7	HP70	2	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	10900	0.94	20.74
8	HP70	2	C	11	8	88	12.95	30%	30%	20%	0.178	1	5450	10900	0.94	20.74
	F312	1	C	11	8	88	12.95	30%	30%	20%						
RC	HP50	5	R	75	8	600	3.46	30%	30%	20%	0.461	1	3600	18000	0.94	13.01

X1-8-1

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	5	C	96	10	960	6.63	30%	30%	20%	0.287	1	3600	18000	0.94	5.06
	F208	2	C	96	10	960	6.63	30%	30%	20%						
	F208	1	C	96	10	960	6.63	30%	30%	20%						
2	HP50	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	3600	3600	0.94	6.85
3	HP50	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	3600	3600	0.94	6.85
4	HP50	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	3600	3600	0.94	6.85
5	HP50	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	3600	3600	0.94	6.85
6	HP50	1	C	11	8	88	12.95	30%	30%	20%	0.178	1	3600	3600	0.94	6.85
7	HP50	2	C	11	8	88	12.95	30%	30%	20%	0.178	1	3600	7200	0.94	13.70
8	HP50	2	C	11	8	88	12.95	30%	30%	20%	0.178	1	3600	7200	0.94	13.70
	F208	1	C	11	8	88	12.95	30%	30%	20%						
RC	HP50	5	R	75	8	600	3.46	30%	30%	20%	0.461	1	3600	18000	0.94	13.01

X1-85

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
2	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
3	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
4	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
5	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
6	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
7	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
8	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
RC	I200	5	R	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
Building Total		32						$1,012		$7		$172	$1,191

X1-84

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
2	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
3	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
4	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
5	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
6	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
7	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
8	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
RC	MH70	5	R	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	($12)
Building Total		23						$596		$75		$191	$862	$329

X1-87

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
2	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
3	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
4	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
5	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
6	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
7	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
8	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
RC	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
Building Total		23						$125		$77		$191	$392	$799

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
2	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
3	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
4	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
5	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
6	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
7	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
8	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
RC	MH70	5	R	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	($12)
Building Total		23						$603		$75		$191	$869	$322

X1-89

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
2	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
3	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
4	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
5	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
6	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
7	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
8	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
RC	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
Building Total		23						$132		$77		$191	$399	$792

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-26
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
2	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
3	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
4	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
5	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
6	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
7	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
8	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
RC	HP50	5	R	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$110
Building Total		23						$133		$75		$191	$398	$793

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	F312	2	11-0	C				132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	F212	1	11-0	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
	I200	2	11-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
2	F312	1	11-0	C	32	290	27	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
	I200	4	10-0	B	32	290	27	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
3	I200	2	11-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
4	F312	3	10-0	B	24	150	14	132	0.40	$133	$14	$42	F312	2	132	0.26	$1,393	F312	5	48	52	988	659	1,647	$1,581
	I200	1	10-0	B	24	150	14	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
5	F312	1	11-0	C	34	310	29	132	0.13	$44	$5	$14	F312	0	132	0.00	$0	F312	1	48	52	329	0	329	$63
	I200	6	11-0	C	34	310	29	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
6	I200	4	10-0	B	24	1150	107	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	4	11-0	C	34	312	29	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
7	I200	2	11-0	C	34	600	56	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	4	11-0	C	34	600	56	132	0.53	$177	$18	$56	F312	0	132	0.00	$0	F312	4	48	52	1,318	0	1,318	$251
8	I200	2	11-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	I200	1	10-0	B				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
9	I200	2	10-0	C	31	190	18	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F212	1	11-0	B	31	190	18	82	0.08	$37	$4	$15	F212	1	82	0.08	$738	F212	2	48	52	205	205	409	$794
10	I200	4	11-0	C	31	165	15	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F212	1	11-0	C	31	165	15	82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
11	I200	4	10-0	B	36	250	23	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F212	2	11-0	C	36	250	23	82	0.16	$75	$7	$30	F212	0	82	0.00	$0	F212	2	48	52	409	0	409	$111
12	I200	7	11-0	C	30	150	14	200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
13	I200	1	10-0	B	30	335	31	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
	I200	4	11-0	C	30	335	31	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	F212	1	11-0	C	30	335	31	82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
14	I200	2	11-0	C	34	124	12	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	2	11-0	C	34	124	12	132	0.26	$89	$9	$28	F312	0	132	0.00	$0	F312	2	48	52	659	0	659	$125
	F212	1	11-0	C	34	124	12	82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
15	I200	2	11-0	C	30	517	48	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
	F312	3	11-0	C	30	517	48	132	0.40	$133	$14	$42	F312	0	132	0.00	$0	F312	3	48	52	988	0	988	$188
16	I200	9	11-0	C				200	1.80	$231	$0	$128	I200	4	200	0.80	$2,835	I200	13	48	52	4,493	1,997	6,490	$3,194
17	I200	2	11-0	R				200	0.40	$51	$0	$28	I200	0	200	0.00	$0	I200	2	48	52	998	0	998	$80
18	I200	9	11-0	R				200	1.80	$231	$0	$128	I200	0	200	0.00	$0	I200	9	48	52	4,493	0	4,493	$359
19	I200	2	11-0	R				200	0.40	$51	$0	$28	I200	0	200	0.00	$0	I200	2	48	52	998	0	998	$80
New Panel																	$1,500								$1,500
Building Total		99							17.89	$2,922	$97	$1,403		35		6.75	$26,309					44,643	16,838	61,481	$30,732

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
2	F312	1	C	290	27	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	6	B	290	27	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
3	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
4	F312	5	B	150	14	132	0.66	$1,581	F208	3		62	0.19	$2,089	48	52	1,647	464	1,183	($508)
	I200	2	B	150	14	200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
5	F312	1	C	310	29	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	9	C	310	29	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
6	I200	6	B	1150	107	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C	312	29	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
7	I200	3	C	600	56	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	4	C	600	56	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
8	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
9	I200	3	C	190	18	200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	F212	2	B	190	18	82	0.16	$794	F208	2		62	0.12	$1,393	48	52	409	310	100	($599)
10	I200	6	C	165	15	200	1.20	$1,577	MH70	4		89	0.36	$2,288	48	52	2,995	889	2,107	($711)
	F212	1	C	165	15	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
11	I200	6	B	250	23	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F212	2	C	250	23	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
12	I200	10	C	150	14	200	2.00	$2,405	MH70	7		89	0.62	$4,004	48	52	4,992	1,555	3,437	($1,599)
13	I200	2	B	335	31	200	0.40	$749	F208	4		62	0.25	$2,785	48	52	998	619	379	($2,037)
	I200	6	C	335	31	200	1.20	$1,577	MH70	4		89	0.36	$2,288	48	52	2,995	889	2,107	($711)
	F212	1	C	335	31	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
14	I200	3	C	124	12	200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	F312	2	C	124	12	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	1	C	124	12	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
15	I200	3	C	517	48	200	0.60	$788	MH70	2		89	0.18	$1,144	48	52	1,498	444	1,053	($356)
	F312	3	C	517	48	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
16	I200	13	C			200	2.60	$3,194	MH70	9		89	0.80	$5,148	48	52	6,490	1,999	4,490	($1,955)
17	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,144	48	52	998	444	554	($1,064)
18	I200	9	R			200	1.80	$359	MH70	9		89	0.80	$5,148	48	52	4,493	1,999	2,494	($4,789)
19	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,144	48	52	998	444	554	($1,064)
New Panel								$1,500												$1,500
Building Total		134					24.63	$30,732		103			8.03	$63,800			61,481	20,050	41,431	($33,068)

X1-93

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
2	F312	1	C	290	27	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	6	B	290	27	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
3	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
4	F312	5	B	150	14	132	0.66	$1,581	F208	3		62	0.19	$2,089	48	52	1,647	464	1,183	($508)
	I200	2	B	150	14	200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
5	F312	1	C	310	29	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	9	C	310	29	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
6	I200	6	B	1150	107	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C	312	29	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
7	I200	3	C	600	56	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	4	C	600	56	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
8	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
9	I200	3	C	190	18	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F212	2	B	190	18	82	0.16	$794	F208	2		62	0.12	$1,393	48	52	409	310	100	($599)
10	I200	6	C	165	15	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F212	1	C	165	15	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
11	I200	6	B	250	23	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F212	2	C	250	23	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
12	I200	10	C	150	14	200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
13	I200	2	B	335	31	200	0.40	$749	F208	4		62	0.25	$2,785	48	52	998	619	379	($2,037)
	I200	6	C	335	31	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F212	1	C	335	31	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
14	I200	3	C	124	12	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C	124	12	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	1	C	124	12	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
15	I200	3	C	517	48	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	3	C	517	48	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
16	I200	13	C			200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
17	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
18	I200	9	R			200	1.80	$359	HP50	9		58	0.52	$5,430	48	52	4,493	1,303	3,190	($5,071)
19	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
New Panel								$1,500												$1,500
Building Total		134					24.63	$30,732		103			8.11	$66,702			61,481	20,243	41,239	($35,970)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
2	F312	1	C	290	27	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	I200	6	B	290	27	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
3	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
4	F312	5	B	150	14	132	0.66	$1,581	F312	3		132	0.40	$2,089	48	52	1,647	988	659	($508)
	I200	2	B	150	14	200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
5	F312	1	C	310	29	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	I200	9	C	310	29	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
6	I200	6	B	1150	107	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	6	C	312	29	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
7	I200	3	C	600	56	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	4	C	600	56	132	0.53	$251	F312	0		132	0.53	$251	48	52	1,318	1,318	0	$0
8	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	I200	2	B			200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
9	I200	3	C	190	18	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F212	2	B	190	18	82	0.16	$794	F312	2		132	0.26	$1,393	48	52	409	659	(250)	($599)
10	I200	6	C	165	15	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F212	1	C	165	15	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
11	I200	6	B	250	23	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	F212	2	C	250	23	82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
12	I200	10	C	150	14	200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
13	I200	2	B	335	31	200	0.40	$749	F312	4		132	0.53	$2,785	48	52	998	1,318	(319)	($2,037)
	I200	6	C	335	31	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	F212	1	C	335	31	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
14	I200	3	C	124	12	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	2	C	124	12	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	F212	1	C	124	12	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
15	I200	3	C	517	48	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
	F312	3	C	517	48	132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
16	I200	13	C			200	2.60	$3,194	MH70	9		89	0.80	$4,957	48	52	6,490	1,999	4,490	($1,763)
17	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
18	I200	9	R			200	1.80	$359	MH70	9		89	0.80	$4,957	48	52	4,493	1,999	2,494	($4,598)
19	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
New Panel								$1,500												$1,500
Building Total		134					24.63	$30,732		84			10.67	$50,762			61,481	26,640	34,842	($20,030)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	F312	2	C			132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
2	F312	1	C	290	27	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	I200	6	B	290	27	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
3	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
4	F312	5	B	150	14	132	0.66	$1,581	F312	3		132	0.40	$2,089	48	52	1,647	988	659	($508)
	I200	2	B	150	14	200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
5	F312	1	C	310	29	132	0.13	$63	F312	0		132	0.13	$63	48	52	329	329	0	$0
	I200	9	C	310	29	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
6	I200	6	B	1150	107	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	I200	6	C	312	29	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
7	I200	3	C	600	56	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	4	C	600	56	132	0.53	$251	F312	0		132	0.53	$251	48	52	1,318	1,318	0	$0
8	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	I200	2	B			200	0.40	$749	F312	1		132	0.13	$696	48	52	998	329	669	$52
9	I200	3	C	190	18	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F212	2	B	190	18	82	0.16	$794	F312	2		132	0.26	$1,393	48	52	409	659	(250)	($599)
10	I200	6	C	165	15	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F212	1	C	165	15	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
11	I200	6	B	250	23	200	1.20	$1,577	F312	4		132	0.53	$2,785	48	52	2,995	1,318	1,677	($1,209)
	F212	2	C	250	23	82	0.16	$111	F212	0		82	0.16	$111	48	52	409	409	0	$0
12	I200	10	C	150	14	200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
13	I200	2	B	335	31	200	0.40	$749	F312	4		132	0.53	$2,785	48	52	998	1,318	(319)	($2,037)
	I200	6	C	335	31	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	F212	1	C	335	31	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
14	I200	3	C	124	12	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	2	C	124	12	132	0.26	$125	F312	0		132	0.26	$125	48	52	659	659	0	$0
	F212	1	C	124	12	82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
15	I200	3	C	517	48	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
	F312	3	C	517	48	132	0.40	$188	F312	0		132	0.40	$188	48	52	988	988	0	$0
16	I200	13	C			200	2.60	$3,194	HP70	9		99	0.89	$5,552	48	52	6,490	2,224	4,266	($2,359)
17	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
18	I200	9	R			200	1.80	$359	HP50	9		58	0.52	$5,430	48	52	4,493	1,303	3,190	($5,071)
19	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
New Panel								$1,500												$1,500
Building Total		134					24.63	$30,732		84			10.75	$54,621			61,481	26,832	34,649	($23,889)

X1-96

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	F312	2	C			132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
2	F312	1	C	290	27	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	6	B	290	27	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
3	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
4	F312	5	B	150	14	132	0.66	$1,581	F208	3		62	0.19	$2,089	48	52	1,647	464	1,183	($508)
	I200	2	B	150	14	200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
5	F312	1	C	310	29	132	0.13	$63	F208	1		62	0.06	$696	48	52	329	155	175	($634)
	I200	9	C	310	29	200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
6	I200	6	B	1150	107	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	I200	6	C	312	29	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
7	I200	3	C	600	56	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	4	C	600	56	132	0.53	$251	F208	4		62	0.25	$2,785	48	52	1,318	619	699	($2,535)
8	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	I200	2	B			200	0.40	$749	F208	1		62	0.06	$696	48	52	998	155	844	$52
9	I200	3	C	190	18	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F212	2	B	190	18	82	0.16	$794	F208	2		62	0.12	$1,393	48	52	409	310	100	($599)
10	I200	6	C	165	15	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F212	1	C	165	15	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
11	I200	6	B	250	23	200	1.20	$1,577	F208	4		62	0.25	$2,785	48	52	2,995	619	2,376	($1,209)
	F212	2	C	250	23	82	0.16	$111	F208	2		62	0.12	$1,393	48	52	409	310	100	($1,281)
12	I200	10	C	150	14	200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
13	I200	2	B	335	31	200	0.40	$749	F208	4		62	0.25	$2,785	48	52	998	619	379	($2,037)
	I200	6	C	335	31	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	F212	1	C	335	31	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
14	I200	3	C	124	12	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	2	C	124	12	132	0.26	$125	F208	2		62	0.12	$1,393	48	52	659	310	349	($1,267)
	F212	1	C	124	12	82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
15	I200	3	C	517	48	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
	F312	3	C	517	48	132	0.40	$188	F208	3		62	0.19	$2,089	48	52	988	464	524	($1,901)
16	I200	13	C			200	2.60	$3,194	HP50	9		58	0.52	$5,430	48	52	6,490	1,303	5,187	($2,236)
17	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
18	I200	9	R			200	1.80	$359	HP50	9		58	0.52	$5,430	48	52	4,493	1,303	3,190	($5,071)
19	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
New Panel								$1,500												$1,500
Building Total		134					24.63	$30,732		103			6.14	$66,049			61,481	15,330	46,151	($35,316)

X1-97

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F312	2	C	32	19	608	5.03	30%	30%	20%						
	F212	1	C	32	19	608	5.03	30%	30%	20%						
	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
2	F312	1	C	19	15	285	7.16	30%	30%	20%						
	I200	6	B	19	15	285	2.98	30%	10%	20%	0.362	1	3400	20400	0.86	22.40
3	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
4	F312	5	B	19	15	285	2.98	30%	10%	20%	0.473	3	2570	38550	0.92	58.96
	I200	2	B	19	15	285	2.98	30%	10%	20%	0.362	1	3400	6800	0.86	7.47
5	F312	1	C	32	19	608	5.03	30%	30%	20%						
	I200	9	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	30600	0.86	11.53
6	I200	6	B	19	15	285	2.98	30%	10%	20%	0.362	1	3400	20400	0.86	22.40
	I200	6	C	19	15	285	7.16	30%	30%	20%	0.204	1	3400	20400	0.86	12.62
7	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
	F312	4	C	32	19	608	5.03	30%	30%	20%						
8	I200	3	C	15	8	120	11.50	30%	30%	20%	0.140	1	3400	10200	0.86	10.29
	I200	2	B	15	8	120	4.79	30%	10%	20%	0.275	1	3400	6800	0.86	13.47
9	I200	3	C	15	10	150	10.00	30%	30%	20%	0.301	1	3400	10200	0.86	17.69
	F212	2	B	15	10	150	4.17	30%	10%	20%	0.396	2	2570	10280	0.92	25.01
10	I200	6	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	20400	0.86	7.69
	F212	1	C	32	19	608	5.03	30%	30%	20%						
11	I200	6	B	19	15	285	2.98	30%	10%	20%	0.362	1	3400	20400	0.86	22.40
	F212	2	C	19	15	285	7.16	30%	30%	20%						
12	I200	10	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	34000	0.86	12.81
13	I200	2	B	19	15	285	2.98	30%	10%	20%	0.362	1	3400	6800	0.86	7.47
	I200	6	C	19	15	285	7.16	30%	30%	20%	0.204	1	3400	20400	0.86	12.62
	F212	1	C	19	15	285	7.16	30%	30%	20%						
14	I200	3	C	32	19	608	5.03	30%	30%	20%	0.265	1	3400	10200	0.86	3.84
	F312	2	C	32	19	608	5.03	30%	30%	20%						
	F212	1	C	32	19	608	5.03	30%	30%	20%						
15	I200	3	C	19	15	285	7.16	30%	30%	20%	0.204	1	3400	10200	0.86	6.31
	F312	3	C	19	15	285	7.16	30%	30%	20%						
RN	I200	13	R	50	8	400	3.63	30%	30%	20%	0.328	1	3400	44200	0.86	31.33
RS	I200	2	R	50	8	400	3.63	30%	30%	20%	0.328	1	3400	6800	0.86	4.82
RE	I200	9	R	140	8	1120	3.30	30%	30%	20%	0.345	1	3400	30600	0.86	8.15
RW	I200	2	R	140	8	1120	3.30	30%	30%	20%	0.345	1	3400	6800	0.86	1.81

X1-98

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F208	2	C	32	19	608	5.03	30%	30%	20%						
	F208	1	C	32	19	608	5.03	30%	30%	20%						
	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
2	F208	1	C	19	15	285	7.16	30%	30%	20%						
	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
3	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
4	F208	3	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	15900	0.92	26.79
	F208	1	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	5300	0.92	8.93
5	F208	1	C	32	19	608	5.03	30%	30%	20%						
	MH70	6	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	24000	0.90	8.05
6	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
	MH70	4	C	19	15	285	7.16	30%	30%	20%	0.170	1	4000	16000	0.90	8.61
7	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F208	4	C	32	19	608	5.03	30%	30%	20%						
8	MH70	2	C	15	8	120	11.50	30%	30%	20%	0.115	1	4000	8000	0.90	6.92
	F208	1	B	15	8	120	4.79	30%	10%	20%	0.421	2	2650	5300	0.92	17.14
9	MH70	2	C	15	10	150	10.00	30%	30%	20%	0.452	1	4000	8000	0.90	21.75
	F208	2	B	15	10	150	4.17	30%	10%	20%	0.422	2	2650	10600	0.92	27.48
10	MH70	4	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	16000	0.90	5.37
	F208	1	C	32	19	608	5.03	30%	30%	20%						
11	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
	F208	2	C	19	15	285	7.16	30%	30%	20%						
12	MH70	7	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	28000	0.90	9.39
13	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
	MH70	4	C	19	15	285	7.16	30%	30%	20%	0.170	1	4000	16000	0.90	8.61
	F208	1	C	19	15	285	7.16	30%	30%	20%						
14	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F208	2	C	32	19	608	5.03	30%	30%	20%						
	F208	1	C	32	19	608	5.03	30%	30%	20%						
15	MH70	2	C	19	15	285	7.16	30%	30%	20%	0.170	1	4000	8000	0.90	4.30
	F208	3	C	19	15	285	7.16	30%	30%	20%						
16	MH70	9	C	50	8	400	8.70	30%	30%	20%	0.141	1	4000	36000	0.90	11.45
17	MH70	2	R	50	8	400	3.63	30%	30%	20%	0.285	1	4000	8000	0.90	5.14
18	MH70	9	R	140	8	1120	3.30	30%	30%	20%	0.302	1	4000	36000	0.90	8.76
19	MH70	2	R	140	8	1120	3.30	30%	30%	20%	0.302	1	4000	8000	0.90	1.95

X1-99

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F208	2	C	32	19	608	5.03	30%	30%	20%						
	F208	1	C	32	19	608	5.03	30%	30%	20%						
	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
2	F208	1	C	19	15	285	7.16	30%	30%	20%						
	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
3	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
4	F208	3	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	15900	0.92	26.79
	F208	1	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	5300	0.92	8.93
5	F208	1	C	32	19	608	5.03	30%	30%	20%						
	HP70	6	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	32700	0.94	18.02
6	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
	HP70	4	C	19	15	285	7.16	30%	30%	20%	0.266	1	5450	21800	0.94	19.14
7	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F208	4	C	32	19	608	5.03	30%	30%	20%						
8	HP70	2	C	15	8	120	11.50	30%	30%	20%	0.178	1	5450	10900	0.94	15.21
	F208	1	B	15	8	120	4.79	30%	10%	20%	0.421	2	2650	5300	0.92	17.14
9	HP70	2	C	15	10	150	10.00	30%	30%	20%	0.452	1	5450	10900	0.94	30.90
	F208	2	B	15	10	150	4.17	30%	10%	20%	0.422	2	2650	10600	0.92	27.48
10	HP70	4	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	21800	0.94	12.01
	F208	1	C	32	19	608	5.03	30%	30%	20%						
11	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
	F208	2	C	19	15	285	7.16	30%	30%	20%						
12	HP70	7	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	38150	0.94	21.02
13	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
	HP70	4	C	19	15	285	7.16	30%	30%	20%	0.266	1	5450	21800	0.94	19.14
	F208	1	C	19	15	285	7.16	30%	30%	20%						
14	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F208	2	C	32	19	608	5.03	30%	30%	20%						
	F208	1	C	32	19	608	5.03	30%	30%	20%						
15	HP70	2	C	19	15	285	7.16	30%	30%	20%	0.266	1	5450	10900	0.94	9.57
	F208	3	C	19	15	285	7.16	30%	30%	20%						
16	HP70	9	C	50	8	400	8.70	30%	30%	20%	0.218	1	5450	49050	0.94	25.15
17	HP50	2	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	7200	0.94	7.59
18	HP50	9	R	140	8	1120	3.30	30%	30%	20%	0.474	1	3600	32400	0.94	12.90
19	HP50	2	R	140	8	1120	3.30	30%	30%	20%	0.474	1	3600	7200	0.94	2.87

X1 - 100

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F312	2	C	32	19	608	5.03	30%	30%	20%						
	F212	1	C	32	19	608	5.03	30%	30%	20%						
	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
2	F312	1	C	19	15	285	7.16	30%	30%	20%						
	F312	4	B	19	15	285	2.98	30%	10%	20%	0.473	3	2570	30840	0.92	47.17
3	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
4	F312	3	B	19	15	285	2.98	30%	10%	20%	0.473	3	2570	23130	0.92	35.38
	F312	1	B	19	15	285	2.98	30%	10%	20%	0.473	3	2570	7710	0.92	11.79
5	F312	1	C	32	19	608	5.03	30%	30%	20%						
	MH70	6	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	24000	0.90	8.05
6	F312	4	B	19	15	285	2.98	30%	10%	20%	0.473	3	2570	30840	0.92	47.17
	MH70	4	C	19	15	285	7.16	30%	30%	20%	0.170	1	4000	16000	0.90	8.61
7	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F312	4	C	32	19	608	5.03	30%	30%	20%						
8	MH70	2	C	15	8	120	11.50	30%	30%	20%	0.115	1	4000	8000	0.90	6.92
	F312	1	B	15	8	120	4.79	30%	10%	20%	0.377	3	2570	7710	0.92	22.32
9	MH70	2	C	15	10	150	10.00	30%	30%	20%	0.407	1	4000	8000	0.90	19.58
	F312	2	B	15	10	150	4.17	30%	10%	20%		3	2570			
10	MH70	4	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	16000	0.90	5.37
	F212	1	C	32	19	608	5.03	30%	30%	20%						
11	F312	4	B	19	15	285	2.98	30%	10%	20%	0.473	3	2570	30840	0.92	47.17
	F212	2	C	19	15	285	7.16	30%	30%	20%						
12	MH70	7	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	28000	0.90	9.39
13	F312	4	B	19	15	285	2.98	30%	10%	20%	0.473	3	2570	30840	0.92	47.17
	MH70	4	C	19	15	285	7.16	30%	30%	20%	0.170	1	4000	16000	0.90	8.61
	F212	1	C	19	15	285	7.16	30%	30%	20%						
14	MH70	2	C	32	19	608	5.03	30%	30%	20%	0.226	1	4000	8000	0.90	2.68
	F312	2	C	32	19	608	5.03	30%	30%	20%						
	F212	1	C	32	19	608	5.03	30%	30%	20%						
15	MH70	2	C	19	15	285	7.16	30%	30%	20%	0.170	1	4000	8000	0.90	4.30
	F312	3	C	19	15	285	7.16	30%	30%	20%						
16	MH70	9	C	50	8	400	8.70	30%	30%	20%	0.141	1	4000	36000	0.90	11.45
17	MH70	2	R	50	8	400	3.63	30%	30%	20%	0.285	1	4000	8000	0.90	5.14
18	MH70	9	R	140	8	1120	3.30	30%	30%	20%	0.302	1	4000	36000	0.90	8.76
19	MH70	2	R	140	8	1120	3.30	30%	30%	20%	0.302	1	4000	8000	0.90	1.95

X1-101

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F312	2	C	32	19	608	5.03	30%	30%	20%						
	F212	1	C	32	19	608	5.03	30%	30%	20%						
	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
2	F312	1	C	19	15	285	7.16	30%	30%	20%						
	F312	4	B	19	15	285	2.98	30%	10%	20%	0.447	3	2570	30840	0.92	44.58
3	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
4	F312	3	B	19	15	285	2.98	30%	10%	20%	0.447	3	2570	23130	0.92	33.43
	F312	1	B	19	15	285	2.98	30%	10%	20%	0.447	3	2570	7710	0.92	11.14
5	F312	1	C	32	19	608	5.03	30%	30%	20%						
	HP70	6	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	32700	0.94	18.02
6	F312	4	B	19	15	285	2.98	30%	10%	20%	0.447	3	2570	30840	0.92	44.58
	HP70	4	C	19	15	285	7.16	30%	30%	20%	0.266	1	5450	21800	0.94	19.14
7	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F312	4	C	32	19	608	5.03	30%	30%	20%						
8	HP70	2	C	15	8	120	11.50	30%	30%	20%	0.178	1	5450	10900	0.94	15.21
	F312	1	B	15	8	120	4.79	30%	10%	20%	0.347	3	2570	7710	0.92	20.55
9	HP70	2	C	15	10	150	10.00	30%	30%	20%	0.378	1	5450	10900	0.94	25.84
	F312	2	B	15	10	150	4.17	30%	10%	20%	0.378	3	2570	15420	0.92	35.81
10	HP70	4	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	21800	0.94	12.01
	F212	1	C	32	19	608	5.03	30%	30%	20%						
11	F312	4	B	19	15	285	2.98	30%	10%	20%	0.447	3	2570	30840	0.92	44.58
	F212	2	C	19	15	285	7.16	30%	30%	20%						
12	HP70	7	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	38150	0.94	21.02
13	F312	4	B	19	15	285	2.98	30%	10%	20%	0.447	3	2570	30840	0.92	44.58
	HP70	4	C	19	15	285	7.16	30%	30%	20%	0.266	1	5450	21800	0.94	19.14
	F212	1	C	19	15	285	7.16	30%	30%	20%						
14	HP70	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	5450	10900	0.94	6.01
	F312	2	C	32	19	608	5.03	30%	30%	20%						
	F212	1	C	32	19	608	5.03	30%	30%	20%						
15	HP70	2	C	19	15	285	7.16	30%	30%	20%	0.266	1	5450	10900	0.94	9.57
	F312	3	C	19	15	285	7.16	30%	30%	20%						
16	HP70	9	C	50	8	400	8.70	30%	30%	20%	0.218	1	5450	49050	0.94	25.15
17	HP50	2	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	7200	0.94	7.59
18	HP50	9	R	140	8	1120	3.30	30%	30%	20%	0.474	1	3600	32400	0.94	12.90
19	HP50	2	R	140	8	1120	3.30	30%	30%	20%	0.474	1	3600	7200	0.94	2.87

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	F208	2	C	32	19	608	5.03	30%	30%	20%						
	F208	1	C	32	19	608	5.03	30%	30%	20%						
	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
2	F208	1	C	19	15	285	7.16	30%	30%	20%						
	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
3	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
4	F208	3	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	15900	0.92	26.79
	F208	1	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	5300	0.92	8.93
5	F208	1	C	32	19	608	5.03	30%	30%	20%						
	HP50	6	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	21600	0.94	11.90
6	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
	HP50	4	C	19	15	285	7.16	30%	30%	20%	0.266	1	3600	14400	0.94	12.65
7	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
	F208	4	C	32	19	608	5.03	30%	30%	20%						
8	HP50	2	C	15	8	120	11.50	30%	30%	20%	0.178	1	3600	7200	0.94	10.05
	F208	1	B	15	8	120	4.79	30%	10%	20%	0.421	2	2650	5300	0.92	17.14
9	HP50	2	C	15	10	150	10.00	30%	30%	20%	0.452	1	3600	7200	0.94	20.41
	F208	2	B	15	10	150	4.17	30%	10%	20%	0.422	2	2650	10600	0.92	27.48
10	HP50	4	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	14400	0.94	7.93
	F208	1	C	32	19	608	5.03	30%	30%	20%						
11	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
	F208	2	C	19	15	285	7.16	30%	30%	20%						
12	HP50	7	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	25200	0.94	13.88
13	F208	4	B	19	15	285	2.98	30%	10%	20%	0.521	2	2650	21200	0.92	35.72
	HP50	4	C	19	15	285	7.16	30%	30%	20%	0.266	1	3600	14400	0.94	12.65
	F208	1	C	19	15	285	7.16	30%	30%	20%						
14	HP50	2	C	32	19	608	5.03	30%	30%	20%	0.356	1	3600	7200	0.94	3.97
	F208	2	C	32	19	608	5.03	30%	30%	20%						
	F208	1	C	32	19	608	5.03	30%	30%	20%						
15	HP50	2	C	19	15	285	7.16	30%	30%	20%	0.266	1	3600	7200	0.94	6.32
	F208	3	C	19	15	285	7.16	30%	30%	20%						
16	HP50	9	C	50	8	400	8.70	30%	30%	20%	0.218	1	3600	32400	0.94	16.61
17	HP50	2	R	50	8	400	3.63	30%	30%	20%	0.448	1	3600	7200	0.94	7.59
18	HP50	9	R	140	8	1120	3.30	30%	30%	20%	0.474	1	3600	32400	0.94	12.90
19	HP50	2	R	140	8	1120	3.30	30%	30%	20%	0.474	1	3600	7200	0.94	2.87

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
2	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
3	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
4	F312	5	B	2496	3	14000	0.9	$23	0.1	$9	1.7	$31	$63
	I200	2	B	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
5	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13
	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
6	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
7	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50
8	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	I200	2	B	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
9	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F212	2	B	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
10	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
11	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22
12	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
13	I200	2	B	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
14	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
15	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
16	I200	13	C	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
17	I200	2	R	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
18	I200	9	R	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
19	I200	2	R	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
Building Total		134						$3,947		$44		$729	$4,721

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
2	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
3	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
4	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$32
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
5	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
6	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
7	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
8	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
9	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
10	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
11	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
12	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
13	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$40
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
14	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
15	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
16	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
17	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
18	MH70	9	R	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	($21)
19	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
Building Total		103						$1,986		$288		$796	$3,070	$1,650

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
2	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
3	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
4	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$32
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
5	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
6	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
7	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
8	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
9	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
10	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
11	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
12	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
13	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$40
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
14	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
15	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
16	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
17	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
18	HP50	9	R	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$198
19	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
Building Total		103						$472		$294		$796	$1,562	$3,159

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
2	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
3	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
4	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$25
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
5	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
6	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
7	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$0
8	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
9	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	($3)
10	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
11	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
12	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
13	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$31
	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
14	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
15	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
16	MH70	9	C	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	$142
17	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
18	MH70	9	R	2496	1	5250	4.3	$277	0.2	$32	3.0	$78	$388	($21)
19	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
Building Total		103						$2,064		$293		$796	$3,153	$1,568

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
2	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
3	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
4	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$25
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
5	F312	1	C	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$0
	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
6	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
7	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	4	C	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$0
8	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	1	B	2496	3	14000	0.2	$5	0.0	$2	0.3	$6	$13	$69
9	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	($3)
10	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
11	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$194
	F212	2	C	2496	2	14000	0.4	$7	0.0	$3	0.7	$13	$22	$0
12	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
13	F312	4	B	2496	3	14000	0.7	$18	0.1	$7	1.3	$25	$50	$31
	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
14	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$0
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
15	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38	$0
16	HP70	9	C	2496	1	16800	1.3	$53	0.2	$33	3.0	$78	$165	$365
17	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
18	HP50	9	R	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$198
19	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
Building Total		103						$549		$299		$796	$1,644	$3,077

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-27
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
2	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
3	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
4	F208	3	B	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$32
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
5	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$2
	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
6	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
7	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	4	C	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$9
8	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	1	B	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$71
9	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
10	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
11	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$203
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$1
12	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
13	F208	4	B	2496	2	14000	0.7	$10	0.1	$7	1.3	$25	$42	$40
	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
14	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$4
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
15	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
	F208	3	C	2496	2	14000	0.5	$8	0.1	$5	1.0	$19	$31	$7
16	HP50	9	C	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$361
17	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
18	HP50	9	R	2496	1	16800	1.3	$58	0.2	$32	3.0	$78	$169	$198
19	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
Building Total		103						$499		$288		$796	$1,583	$3,137

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
1	I200	4	10-0	C	36	150	14	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	I200	5	10-0	B	36	150	14	200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
	F312	2	9-0	C	36	150	14	132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
	F312	2	9-0	B	36	150	14	132	0.26	$89	$9	$28	F312	1	132	0.13	$696	F312	3	48	52	659	329	988	$822
2	I200	7	10-0	C	36	175	16	200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
	I200	4	10-0	B	36	175	16	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
	HP10	1	10-0	C	36			136	0.14	$70	$10	$13	HP10	1	136	0.14	$631	HP10	2	48	52	339	339	679	$722
3	I200	10	10-0	C	36	250	23	200	2.00	$257	$0	$142	I200	4	200	0.80	$2,835	I200	14	48	52	4,992	1,997	6,989	$3,233
	I200	7	10-0	B	36	250	23	200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
4	I200	15	10-0	C	36	70	7	200	3.00	$385	$0	$213	I200	6	200	1.20	$4,252	I200	21	48	52	7,488	2,995	10,483	$4,850
5	I200	5	10-0	C	36	75	7	200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
6	I200	16	10-0	C	36	300	28	200	3.20	$411	$0	$227	I200	7	200	1.40	$4,961	I200	23	48	52	7,987	3,494	11,482	$5,599
	HP10	2	10-0	C	36	300	28	136	0.27	$139	$19	$25	HP10	1	136	0.14	$631	HP10	3	48	52	679	339	1,018	$814
7	I200	12	10-0	C	36	470	44	200	2.40	$308	$0	$170	I200	5	200	1.00	$3,544	I200	17	48	52	5,990	2,496	8,486	$4,022
	HP10	6	10-0	C	36	470	44	136	0.82	$418	$58	$76	HP10	3	136	0.41	$1,892	HP10	9	48	52	2,037	1,018	3,055	$2,443
8	I200	15	10-0	C	36	95	9	200	3.00	$385	$0	$213	I200	6	200	1.20	$4,252	I200	21	48	52	7,488	2,995	10,483	$4,850
9	I200	7	10-0	C	36	188	17	200	1.40	$180	$0	$99	I200	3	200	0.60	$2,126	I200	10	48	52	3,494	1,498	4,992	$2,405
	HP10	2	10-0	C	36	188	17	136	0.27	$139	$19	$25	HP10	1	136	0.14	$631	HP10	3	48	52	679	339	1,018	$814
10	I200	6	10-0	C	36	125	12	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
11	I200	13	10-0	R	36	750	70	200	2.60	$334	$0	$184	I200	0	200	0.00	$0	I200	13	48	52	6,490	0	6,490	$518
12	I200	7	10-0	R	36			200	1.40	$180	$0	$99	I200	0	200	0.00	$0	I200	7	48	52	3,494	0	3,494	$279
13	I200	4	10-0	R	36			200	0.80	$103	$0	$57	I200	0	200	0.00	$0	I200	4	48	52	1,997	0	1,997	$159
14	I200	4	10-0	C	32	460	43	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
15	I200	4	10-0	C	32	260	24	200	0.80	$103	$0	$57	I200	2	200	0.40	$1,417	I200	6	48	52	1,997	998	2,995	$1,577
16	I200	2	10-0	C	32	650	60	200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
17	I200	1	10-0	C	32	1500	139	200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
18	I200	6	10-0	C	32	100	9	200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
19	I200	6	10-0	C				200	1.20	$154	$0	$85	I200	3	200	0.60	$2,126	I200	9	48	52	2,995	1,498	4,493	$2,365
20	I200	3	10-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
21	I200	3	10-0	C				200	0.60	$77	$0	$43	I200	2	200	0.40	$1,417	I200	5	48	52	1,498	998	2,496	$1,537
	F212	1	9-0	C				82	0.08	$37	$4	$15	F212	0	82	0.00	$0	F212	1	48	52	205	0	205	$56
22	I200	15	10-0	C	36	277	26	200	3.00	$385	$0	$213	I200	6	200	1.20	$4,252	I200	21	48	52	7,488	2,995	10,483	$4,850
	I200	5	10-0	C	36	277	26	200	1.00	$128	$0	$71	I200	2	200	0.40	$1,417	I200	7	48	52	2,496	998	3,494	$1,617
New Panel																	$1,500								$1,500
Page Total		202							39.31	$5,758	$127	$2,846		80		15.48	$57,702		282			98,108	38,638	136,746	$66,434

X1-110

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Existing Fixtures												Upgrade Fixtures					Baseline Total							
	Type	Qty	Mount. Height (Ft-In)	Loc	Wrkng Height (Inches)	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Relamp Cost	Reballast Cost (1 per 20)	Replace Fixture (1 per 50)	Type	Qty	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Type	Qty	Hrs/ Week	Wks/ Year	Existing Power (kWh)	Upgrade Power (kWh)	Total Power (kWh)	Total Baseline Cost
23	I200	2	10-0	R				200	0.40	$51	$0	$28	I200	0	200	0.00	$0	I200	2	48	52	998	0	998	$80
24	I200	20	10-0	C				200	4.00	$514	$0	$283	I200	8	200	1.60	$5,670	I200	28	48	52	9,984	3,994	13,978	$6,467
25	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
26	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
27	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
28	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
29	I200	20	10-0	C				200	4.00	$514	$0	$283	I200	8	200	1.60	$5,670	I200	28	48	52	9,984	3,994	13,978	$6,467
30	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
31	I200	2	10-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
32	I200	2	10-0	C				200	0.40	$51	$0	$28	I200	1	200	0.20	$709	I200	3	48	52	998	499	1,498	$788
33	I200	1	10-0	C				200	0.20	$26	$0	$14	I200	1	200	0.20	$709	I200	2	48	52	499	499	998	$749
Page Total		52							10.40	$1,336	$0	$737		24		4.80	$17,009		76			25,958	11,981	37,939	$19,082
Building Tot		254							49.71	$7,094	$127	$3,583		104		20.28	$74,711		358			124,066	50,619	174,685	$85,515

X1-111

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	6	C	150	14	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	7	B	150	14	200	1.40	$1,617	F208	6		62	0.50	$5,571	48	52	3,494	1,238	2,256	($3,954)
	F312	3	C	150	14	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	F312	3	B	150	14	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
2	I200	10	C	175	16	200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	6	B	175	16	200	1.20	$1,577	F208	4		62	0.50	$5,571	48	52	2,995	1,238	1,757	($3,994)
	HP10	2	C			136	0.27	$722	HP10	1		136	0.14	$631	48	52	679	339	339	$92
3	I200	14	C	250	23	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
	I200	10	B	250	23	200	2.00	$2,405	F208	6		62	0.50	$5,571	48	52	4,992	1,238	3,754	($3,166)
4	I200	21	C	70	7	200	4.20	$4,850	MH70	15		89	1.34	$8,261	48	52	10,483	3,332	7,151	($3,411)
5	I200	7	C	75	7	200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
6	I200	23	C	300	28	200	4.60	$5,599	MH70	16		89	1.42	$8,812	48	52	11,482	3,554	7,927	($3,213)
	HP10	3	C	300	28	136	0.41	$814	HP10	2		136	0.27	$1,261	48	52	1,018	679	339	($447)
7	I200	17	C	470	44	200	3.40	$4,022	MH70	12		89	1.07	$6,609	48	52	8,486	2,666	5,821	($2,587)
	HP10	9	C	470	44	136	1.22	$2,443	HP10	6		136	0.82	$3,783	48	52	3,055	2,037	1,018	($1,341)
8	I200	21	C	95	9	200	4.20	$4,850	MH70	15		89	1.34	$8,261	48	52	10,483	3,332	7,151	($3,411)
9	I200	10	C	188	17	200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	HP10	3	C	188	17	136	0.41	$814	HP10	2		136	0.27	$1,261	48	52	1,018	679	339	($447)
10	I200	9	C	125	12	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
11	I200	13	R	750	70	200	2.60	$518	MH70	13		89	1.16	$7,160	48	52	6,490	2,888	3,602	($6,642)
12	I200	7	R			200	1.40	$279	MH70	7		89	0.62	$3,855	48	52	3,494	1,555	1,939	($3,576)
13	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
14	I200	6	C	460	43	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
15	I200	6	C	260	24	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
16	I200	3	C	650	60	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
17	I200	2	C	1500	139	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
18	I200	9	C	100	9	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
19	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
20	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
21	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
22	I200	21	C	277	26	200	4.20	$4,850	MH70	15		89	1.34	$8,580	48	52	10,483	3,332	7,151	($3,730)
	I200	7	C	277	26	200	1.40	$1,617	MH70	5		89	0.45	$2,860	48	52	3,494	1,111	2,384	($1,243)
New Panel								$1,500												$1,500
Page Total		282					54.79	$66,434		210			18.42	$121,185			136,746	45,986	90,760	($54,751)

X1-112

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
23	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
24	I200	28	C			200	5.60	$6,467	MH70	20		89	1.78	$11,015	48	52	13,978	4,443	9,535	($4,548)
25	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
26	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
27	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
28	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
29	I200	28	C			200	5.60	$6,467	MH70	20		89	1.78	$11,015	48	52	13,978	4,443	9,535	($4,548)
30	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
31	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
32	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
33	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
Page Total		76					15.20	$19,082		52			4.63	$28,640			37,939	11,551	26,388	($9,558)
Building Tot		358					69.99	$85,515		262			23.05	$149,824			174,685	57,538	117,147	($64,309)

X1-113

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	6	C	150	14	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	7	B	150	14	200	1.40	$1,617	F208	6		62	0.50	$5,571	48	52	3,494	1,238	2,256	($3,954)
	F312	3	C	150	14	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	F312	3	B	150	14	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
2	I200	10	C	175	16	200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	6	B	175	16	200	1.20	$1,577	F208	8		62	0.50	$5,571	48	52	2,995	1,238	1,757	($3,994)
	HP10	2	C			136	0.27	$722	HP10	1		136	0.14	$631	48	52	679	339	339	$92
3	I200	14	C	250	23	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
	I200	10	B	250	23	200	2.00	$2,405	F208	6		62	0.50	$5,571	48	52	4,992	1,238	3,754	($3,166)
4	I200	21	C	70	7	200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,707	6,777	($4,404)
5	I200	7	C	75	7	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
6	I200	23	C	300	28	200	4.60	$5,599	HP70	16		99	1.58	$9,871	48	52	11,482	3,954	7,528	($4,272)
	HP10	3	C	300	28	136	0.41	$814	HP10	2		136	0.27	$1,261	48	52	1,018	679	339	($447)
7	I200	17	C	470	44	200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,965	5,521	($3,381)
	HP10	9	C	470	44	136	1.22	$2,443	HP10	6		136	0.82	$3,783	48	52	3,055	2,037	1,018	($1,341)
8	I200	21	C	95	9	200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,707	6,777	($4,404)
9	I200	10	C	188	17	200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	HP10	3	C	188	17	136	0.41	$814	HP10	2		136	0.27	$1,261	48	52	1,018	679	339	($447)
10	I200	9	C	125	12	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
11	I200	13	R	750	70	200	2.60	$518	HP50	13		58	0.75	$7,843	48	52	6,490	1,882	4,608	($7,325)
12	I200	7	R			200	1.40	$279	HP50	7		58	0.41	$4,223	48	52	3,494	1,013	2,481	($3,944)
13	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
14	I200	6	C	460	43	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
15	I200	6	C	260	24	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
16	I200	3	C	650	60	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
17	I200	2	C	1500	139	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
18	I200	9	C	100	9	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
19	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
20	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
21	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
22	I200	21	C	277	26	200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,707	6,777	($4,404)
	I200	7	C	277	26	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
New Panel								$1,500												$1,500
Page Total		282					54.79	$66,434		210			19.14	$131,681			136,746	47,773	88,972	($65,248)

XI-114

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
23	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
24	I200	28	C			200	5.60	$6,467	HP70	20		99	1.98	$12,339	48	52	13,978	4,942	9,036	($5,872)
25	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
26	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
27	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
28	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
29	I200	28	C			200	5.60	$6,467	HP70	20		99	1.98	$12,339	48	52	13,978	4,942	9,036	($5,872)
30	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
31	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
32	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
33	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
Page Total		76					15.20	$19,082		52			5.07	$32,053			37,939	12,645	25,294	($12,971)
Building Tot		358					69.99	$85,515		262			24.21	$163,735			174,685	60,418	114,267	($78,219)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	6	C	150	14	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
	I200	7	B	150	14	200	1.40	$1,617	F312	8		132	1.06	$5,571	48	52	3,494	2,636	859	($3,954)
	F312	3	C	150	14	132	0.40	$822	F312	0		132	0.40	$822	48	52	988	988	0	$0
	F312	3	B	150	14	132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
2	I200	10	C	175	16	200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	I200	6	B	175	16	200	1.20	$1,577	F312	8		132	1.06	$5,571	48	52	2,995	2,636	359	($3,994)
	HP10	2	C			136	0.27	$722	HP10	1		136	0.14	$631	48	52	679	339	339	$92
3	I200	14	C	250	23	200	2.80	$3,233	MH70	10		89	0.89	$5,508	48	52	6,989	2,221	4,767	($2,274)
	I200	10	B	250	23	200	2.00	$2,405	F312	8		132	1.06	$5,571	48	52	4,992	2,636	2,356	($3,166)
4	I200	21	C	70	7	200	4.20	$4,850	MH70	15		89	1.34	$8,261	48	52	10,483	3,332	7,151	($3,411)
5	I200	7	C	75	7	200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
6	I200	23	C	300	28	200	4.60	$5,599	MH70	16		89	1.42	$8,812	48	52	11,482	3,554	7,927	($3,213)
	HP10	3	C	300	28	136	0.41	$814	HP10	2		136	0.27	$1,261	48	52	1,018	679	339	($447)
7	I200	17	C	470	44	200	3.40	$4,022	MH70	12		89	1.07	$6,609	48	52	8,486	2,666	5,821	($2,587)
	HP10	9	C	470	44	136	1.22	$2,443	HP10	6		136	0.82	$3,783	48	52	3,055	2,037	1,018	($1,341)
8	I200	21	C	95	9	200	4.20	$4,850	MH70	15		89	1.34	$8,261	48	52	10,483	3,332	7,151	($3,411)
9	I200	10	C	188	17	200	2.00	$2,405	MH70	7		89	0.62	$3,855	48	52	4,992	1,555	3,437	($1,450)
	HP10	3	C	188	17	136	0.41	$814	HP10	2		136	0.27	$1,261	48	52	1,018	679	339	($447)
10	I200	9	C	125	12	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
11	I200	13	R	750	70	200	2.60	$518	MH70	13		89	1.16	$7,160	48	52	6,490	2,888	3,602	($6,642)
12	I200	7	R			200	1.40	$279	MH70	7		89	0.62	$3,855	48	52	3,494	1,555	1,939	($3,576)
13	I200	4	R			200	0.80	$159	MH70	4		89	0.36	$2,203	48	52	1,997	889	1,108	($2,044)
14	I200	6	C	460	43	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
15	I200	6	C	260	24	200	1.20	$1,577	MH70	4		89	0.36	$2,203	48	52	2,995	889	2,107	($626)
16	I200	3	C	650	60	200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
17	I200	2	C	1500	139	200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
18	I200	9	C	100	9	200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
19	I200	9	C			200	1.80	$2,365	MH70	6		89	0.53	$3,305	48	52	4,493	1,333	3,160	($939)
20	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
21	I200	5	C			200	1.00	$1,537	MH70	3		89	0.27	$1,652	48	52	2,496	666	1,830	($115)
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
22	I200	21	C	277	26	200	4.20	$4,850	MH70	15		89	1.34	$8,261	48	52	10,483	3,332	7,151	($3,411)
	I200	7	C	277	26	200	1.40	$1,617	MH70	5		89	0.45	$2,754	48	52	3,494	1,111	2,384	($1,137)
New Panel								$1,500												$1,500
Page Total		282					54.79	$66,434		207			20.54	$119,548			136,746	51,258	85,488	($53,114)

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11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
23	I200	2	R			200	0.40	$80	MH70	2		89	0.18	$1,102	48	52	998	444	554	($1,022)
24	I200	28	C			200	5.60	$6,467	MH70	20		89	1.78	$11,015	48	52	13,978	4,443	9,535	($4,548)
25	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
26	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
27	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
28	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
29	I200	28	C			200	5.60	$6,467	MH70	20		89	1.78	$11,015	48	52	13,978	4,443	9,535	($4,548)
30	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
31	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
32	I200	3	C			200	0.60	$788	MH70	2		89	0.18	$1,102	48	52	1,498	444	1,053	($313)
33	I200	2	C			200	0.40	$749	MH70	1		89	0.09	$551	48	52	998	222	776	$198
Page Total		76					15.20	$19,082		52			4.63	$28,640			37,939	11,551	26,388	($9,558)
Building Tot		358					69.99	$85,515		259			25.16	$148,187			174,685	62,809	111,876	($62,672)

X1-117

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	6	C	150	14	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
	I200	7	B	150	14	200	1.40	$1,617	F312	8		132	1.06	$5,571	48	52	3,494	2,636	859	($3,954)
	F312	3	C	150	14	132	0.40	$822	F312	0		132	0.40	$822	48	52	988	988	0	$0
	F312	3	B	150	14	132	0.40	$822	F312	2		132	0.26	$1,393	48	52	988	659	329	($571)
2	I200	10	C	175	16	200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	I200	6	B	175	16	200	1.20	$1,577	F312	8		132	1.06	$5,571	48	52	2,995	2,636	359	($3,994)
	HP10	2	C			136	0.27	$722	HP10	1		136	0.14	$631	48	52	679	339	339	$92
3	I200	14	C	250	23	200	2.80	$3,233	HP70	10		99	0.99	$6,169	48	52	6,989	2,471	4,518	($2,936)
	I200	10	B	250	23	200	2.00	$2,405	F312	8		132	1.06	$5,571	48	52	4,992	2,636	2,356	($3,166)
4	I200	21	C	70	7	200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,707	6,777	($4,404)
5	I200	7	C	75	7	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
6	I200	23	C	300	28	200	4.60	$5,599	HP70	16		99	1.58	$9,871	48	52	11,482	3,954	7,528	($4,272)
	HP10	3	C	300	28	136	0.41	$814	HP10	2		136	0.27	$1,261	48	52	1,018	679	339	($447)
7	I200	17	C	470	44	200	3.40	$4,022	HP70	12		99	1.19	$7,403	48	52	8,486	2,965	5,521	($3,381)
	HP10	9	C	470	44	136	1.22	$2,443	HP10	6		136	0.82	$3,783	48	52	3,055	2,037	1,018	($1,341)
8	I200	21	C	95	9	200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,707	6,777	($4,404)
9	I200	10	C	188	17	200	2.00	$2,405	HP70	7		99	0.69	$4,319	48	52	4,992	1,730	3,262	($1,913)
	HP10	3	C	188	17	136	0.41	$814	HP10	2		136	0.27	$1,261	48	52	1,018	679	339	($447)
10	I200	9	C	125	12	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
11	I200	13	R	750	70	200	2.60	$518	HP50	13		58	0.75	$7,843	48	52	6,490	1,882	4,608	($7,325)
12	I200	7	R			200	1.40	$279	HP50	7		58	0.41	$4,223	48	52	3,494	1,013	2,481	($3,944)
13	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
14	I200	6	C	460	43	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
15	I200	6	C	260	24	200	1.20	$1,577	HP70	4		99	0.40	$2,468	48	52	2,995	988	2,007	($891)
16	I200	3	C	650	60	200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
17	I200	2	C	1500	139	200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
18	I200	9	C	100	9	200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
19	I200	9	C			200	1.80	$2,365	HP70	6		99	0.59	$3,702	48	52	4,493	1,483	3,010	($1,336)
20	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
21	I200	5	C			200	1.00	$1,537	HP70	3		99	0.30	$1,851	48	52	2,496	741	1,755	($314)
	F212	1	C			82	0.08	$56	F212	0		82	0.08	$56	48	52	205	205	0	$0
22	I200	21	C	277	26	200	4.20	$4,850	HP70	15		99	1.49	$9,254	48	52	10,483	3,707	6,777	($4,404)
	I200	7	C	277	26	200	1.40	$1,617	HP70	5		99	0.50	$3,085	48	52	3,494	1,236	2,259	($1,468)
New Panel								$1,500												$1,500
Page Total		282					54.79	$66,434		207			21.25	$130,470			136,746	53,045	83,701	($64,036)

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
23	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
24	I200	28	C			200	5.60	$6,467	HP70	20		99	1.98	$12,339	48	52	13,978	4,942	9,036	($5,872)
25	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
26	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
27	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
28	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
29	I200	28	C			200	5.60	$6,467	HP70	20		99	1.98	$12,339	48	52	13,978	4,942	9,036	($5,872)
30	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
31	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
32	I200	3	C			200	0.60	$788	HP70	2		99	0.20	$1,234	48	52	1,498	494	1,003	($445)
33	I200	2	C			200	0.40	$749	HP70	1		99	0.10	$617	48	52	998	247	751	$132
Page Total		76					15.20	$19,082		52			5.07	$32,053			37,939	12,645	25,294	($12,971)
Building Tot		358					69.99	$85,515		259			26.32	$162,523			174,685	65,690	108,995	($77,008)

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Baseline Fixtures								Proposed Fixtures						Comparison					
	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
1	I200	6	C	150	14	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
	I200	7	B	150	14	200	1.40	$1,617	F208	8		62	0.50	$5,571	48	52	3,494	1,238	2,256	($3,954)
	F312	3	C	150	14	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
	F312	3	B	150	14	132	0.40	$822	F208	2		62	0.12	$1,393	48	52	988	310	679	($571)
2	I200	10	C	175	16	200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
	I200	6	B	175	16	200	1.20	$1,577	F208	8		62	0.50	$5,571	48	52	2,995	1,238	1,757	($3,994)
	HP10	2	C			136	0.27	$722	HP10	1		136	0.14	$631	48	52	679	339	339	$92
3	I200	14	C	250	23	200	2.80	$3,233	HP50	10		58	0.58	$6,033	48	52	6,989	1,448	5,541	($2,800)
	I200	10	B	250	23	200	2.00	$2,405	F208	6		62	0.50	$5,571	48	52	4,992	1,238	3,754	($3,166)
4	I200	21	C	70	7	200	4.20	$4,850	HP50	15		58	0.87	$9,050	48	52	10,483	2,172	8,312	($4,199)
5	I200	7	C	75	7	200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
6	I200	23	C	300	28	200	4.60	$5,599	HP50	16		58	0.93	$9,653	48	52	11,482	2,316	9,165	($4,054)
	HP10	3	C	300	28	136	0.41	$814	HP10	2		136	0.27	$1,261	48	52	1,018	679	339	($447)
7	I200	17	C	470	44	200	3.40	$4,022	HP50	12		58	0.70	$7,240	48	52	8,486	1,737	6,749	($3,218)
	HP10	9	C	470	44	136	1.22	$2,443	HP10	6		136	0.82	$3,783	48	52	3,055	2,037	1,018	($1,341)
8	I200	21	C	95	9	200	4.20	$4,850	HP50	15		58	0.87	$9,050	48	52	10,483	2,172	8,312	($4,199)
9	I200	10	C	188	17	200	2.00	$2,405	HP50	7		58	0.41	$4,223	48	52	4,992	1,013	3,979	($1,818)
	HP10	3	C	188	17	136	0.41	$814	HP10	2		136	0.27	$1,261	48	52	1,018	679	339	($447)
10	I200	9	C	125	12	200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
11	I200	13	R	750	70	200	2.60	$518	HP50	13		58	0.75	$7,843	48	52	6,490	1,882	4,608	($7,325)
12	I200	7	R			200	1.40	$279	HP50	7		58	0.41	$4,223	48	52	3,494	1,013	2,481	($3,944)
13	I200	4	R			200	0.80	$159	HP50	4		58	0.23	$2,413	48	52	1,997	579	1,418	($2,254)
14	I200	6	C	460	43	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
15	I200	6	C	260	24	200	1.20	$1,577	HP50	4		58	0.23	$2,413	48	52	2,995	579	2,416	($836)
16	I200	3	C	650	60	200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
17	I200	2	C	1500	139	200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
18	I200	9	C	100	9	200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
19	I200	9	C			200	1.80	$2,365	HP50	6		58	0.35	$3,620	48	52	4,493	869	3,624	($1,255)
20	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
21	I200	5	C			200	1.00	$1,537	HP50	3		58	0.17	$1,810	48	52	2,496	434	2,062	($273)
	F212	1	C			82	0.08	$56	F208	1		62	0.06	$696	48	52	205	155	50	($641)
22	I200	21	C	277	26	200	4.20	$4,850	HP50	15		58	0.87	$9,050	48	52	10,483	2,172	8,312	($4,199)
	I200	7	C	277	26	200	1.40	$1,617	HP50	5		58	0.29	$3,017	48	52	3,494	724	2,771	($1,400)
New Panel								$1,500												$1,500
Page Total		282					54.79	$66,434		210			13.15	$129,693			136,746	32,832	103,913	($63,259)

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11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

	Baseline Fixtures								Proposed Fixtures						Comparison					
Room No.	Type	Qty	Loc	Light Level (lx)	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	Total Baseline Cost	Type	Qty	Light Level (fc)	Fix. Watt. (W)	Fix. Load (kW)	New Fixture Cost	Hrs/ Week	Wks/ Year	Baseline Power (kWh)	Prpsd Power (kWh)	Delta Power (kWh)	Delta Fixture Cost
23	I200	2	R			200	0.40	$80	HP50	2		58	0.12	$1,207	48	52	998	290	709	($1,127)
24	I200	28	C			200	5.60	$6,467	HP50	20		58	1.16	$12,066	48	52	13,978	2,895	11,082	($5,599)
25	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
26	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
27	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
28	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
29	I200	28	C			200	5.60	$6,467	HP50	20		58	1.16	$12,066	48	52	13,978	2,895	11,082	($5,599)
30	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
31	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
32	I200	3	C			200	0.60	$788	HP50	2		58	0.12	$1,207	48	52	1,498	290	1,208	($418)
33	I200	2	C			200	0.40	$749	HP50	1		58	0.06	$603	48	52	998	145	854	$145
Page Total		76					15.20	$19,082		52			3.02	$31,372			37,939	7,528	30,411	($12,290)
Building Tot		358					69.99	$85,515		262			16.17	$161,065			174,685	40,360	134,325	($75,550)

X1-121

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	I200	6	C	49	11.5	564	6.44	30%	30%	20%	0.224	1	3400	20400	0.86	7.01
	I200	7	B	49	11.5	564	2.68	30%	10%	20%	0.346	1	3400	23800	0.86	12.63
	F312	3	C	49	11.5	564	6.44	30%	30%	20%						
	F312	3	B	49	11.5	564	2.68	30%	10%	20%	0.467	3	2570	23130	0.92	17.67
2	I200	10	C	49	19	931	4.38	30%	30%	20%	0.292	1	3400	34000	0.86	9.22
	I200	6	B	49	19	931	1.83	30%	10%	20%	0.409	1	3400	20400	0.86	7.75
	HP10	2	C	49	19	931	4.38	30%	30%	20%		1	8550			
3	I200	14	C	49	19	931	4.38	30%	30%	20%	0.292	1	3400	47600	0.86	12.91
	I200	10	B	49	19	931	1.83	30%	10%	20%	0.409	1	3400	34000	0.86	12.91
4	I200	21	C	49	19	931	4.38	30%	30%	20%	0.292	1	3400	71400	0.86	19.36
5	I200	7	C	49	9	441	7.89	30%	30%	20%	0.186	1	3400	23800	0.86	8.68
6	I200	23	C	49	19	931	4.38	30%	30%	20%	0.292	1	3400	78200	0.86	21.20
	HP10	3	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	25650	0.94	10.24
7	I200	17	C	49	19	931	4.38	30%	30%	20%	0.292	1	3400	57800	0.86	15.67
	HP10	9	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	76950	0.94	30.72
8	I200	21	C	49	19	931	4.38	30%	30%	20%	0.292	1	3400	71400	0.86	19.36
9	I200	10	C	29	19	551	5.23	30%	30%	20%	0.259	1	3400	34000	0.86	13.82
	HP10	3	C	29	19	551	5.23	30%	30%	20%	0.347	1	8550	25650	0.94	15.20
10	I200	9	C	20	19	380	6.16	30%	30%	20%	0.232	1	3400	30600	0.86	16.15
11	I200	13	R	164	11	1804	2.43	30%	30%	20%	0.398	1	3400	44200	0.86	8.43
12	I200	7	R	125	11	1375	2.47	30%	30%	20%	0.395	1	3400	23800	0.86	5.91
13	I200	4	R	20	11	220	3.52	30%	30%	20%	0.333	1	3400	13600	0.86	17.80
14	I200	6	C	14	13	182	8.90	30%	30%	20%	0.166	1	3400	20400	0.86	16.09
15	I200	6	C	13	13	169	9.23	30%	30%	20%	0.158	1	3400	20400	0.86	16.49
16	I200	3	C	14	13	182	8.90	30%	30%	20%	0.166	1	3400	10200	0.86	8.04
17	I200	2	C	14	8	112	11.79	30%	30%	20%	0.140	1	3400	6800	0.86	7.35
18	I200	9	C	50	5	250	13.20	30%	30%	20%	0.140	1	3400	30600	0.86	14.81
19	I200	9	C	94	8	752	8.14	30%	30%	20%	0.180	1	3400	30600	0.86	6.33
20	I200	5	C	74	8	592	8.31	30%	30%	20%	0.177	1	3400	17000	0.86	4.39
21	I200	5	C	29	18	522	5.40	30%	30%	20%	0.254	1	3400	17000	0.86	7.15
	F212	1	C	29	18	522	5.40	30%	30%	20%						
22	I200	21	C	34	30	1020	3.76	30%	30%	20%	0.321	1	3400	71400	0.86	19.43
	I200	7	C	34	30	1020	3.76	30%	30%	20%	0.321	1	3400	23800	0.86	6.48

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	I200	2	R	32	9	288	3.56	30%	30%	20%	0.331	1	3400	6800	0.86	6.76
24	I200	28	C	38	31	1178	3.51	30%	30%	20%	0.334	1	3400	95200	0.86	23.33
25	I200	2	C	10	9	90	12.67	30%	30%	20%	0.158	1	3400	6800	0.86	10.32
26	I200	2	C	11	4	44	20.45	30%	30%	20%	0.158	1	3400	6800	0.86	21.11
27	I200	2	C	9	7	63	15.24	30%	30%	20%	0.158	1	3400	6800	0.86	14.74
28	I200	2	C	13	11	143	10.07	30%	30%	20%	0.158	1	3400	6800	0.86	6.50
29	I200	28	C	36	31	1116	3.60	30%	30%	20%	0.329	1	3400	95200	0.86	24.26
30	I200	2	C	12	8	96	12.50	30%	30%	20%	0.158	1	3400	6800	0.86	9.68
31	I200	3	C	8	7	56	16.07	30%	30%	20%	0.158	1	3400	10200	0.86	24.88
32	I200	3	C	9	6.5	59	15.90	30%	30%	20%	0.158	1	3400	10200	0.86	23.82
33	I200	2	C	8	7	56	16.07	30%	30%	20%	0.158	1	3400	6800	0.86	16.59

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	4	C	49	11.5	564	6.44	30%	30%	20%	0.188	1	4000	16000	0.90	4.82
	F208	8	B	49	11.5	564	2.68	30%	10%	20%	0.539	2	2650	42400	0.92	37.38
	F208	2	C	49	11.5	564	6.44	30%	30%	20%						
	F208	2	B	49	11.5	564	2.68	30%	10%	20%	0.539	2	2650	10600	0.92	9.34
2	MH70	7	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	28000	0.90	6.81
	F208	8	B	49	19	931	1.83	30%	10%	20%	0.594	2	2650	42400	0.92	24.93
	HP10	1	C	49	19	931	4.38	30%	30%	20%		1	8550			
3 .	MH70	10	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	40000	0.90	9.73
	F208	8	B	49	19	931	1.83	30%	10%	20%	0.594	2	2650	42400	0.92	24.93
4	MH70	15	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	60000	0.90	14.59
5	MH70	5	C	49	9	441	7.89	30%	30%	20%	0.154	1	4000	20000	0.90	6.30
6	MH70	16	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	64000	0.90	15.57
	HP10	2	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	17100	0.94	6.83
7	MH70	12	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	48000	0.90	11.67
	HP10	6	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	51300	0.94	20.48
8	MH70	15	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	60000	0.90	14.59
9	MH70	7	C	29	19	551	5.23	30%	30%	20%	0.221	1	4000	28000	0.90	10.13
	HP10	2	C	29	19	551	5.23	30%	30%	20%	0.347	1	8550	17100	0.94	10.13
10	MH70	6	C	20	19	380	6.16	30%	30%	20%	0.195	1	4000	24000	0.90	11.11
11	MH70	13	R	164	11	1804	2.43	30%	30%	20%	0.354	1	4000	52000	0.90	9.21
12	MH70	7	R	125	11	1375	2.47	30%	30%	20%	0.351	1	4000	28000	0.90	6.45
13	MH70	4	R	20	11	220	3.52	30%	30%	20%	0.290	1	4000	16000	0.90	19.03
14	MH70	4	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	16000	0.90	10.94
15	MH70	4	C	13	13	169	9.23	30%	30%	20%	0.131	1	4000	16000	0.90	11.19
16	MH70	2	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	8000	0.90	5.47
17	MH70	1	C	14	8	112	11.79	30%	30%	20%	0.115	1	4000	4000	0.90	3.71
18	MH70	6	C	50	5	250	13.20	30%	30%	20%	0.115	1	4000	24000	0.90	9.96
19	MH70	6	C	94	8	752	8.14	30%	30%	20%	0.150	1	4000	24000	0.90	4.32
20	MH70	3	C	74	8	592	8.31	30%	30%	20%	0.147	1	4000	12000	0.90	2.69
21	MH70	3	C	29	18	522	5.40	30%	30%	20%	0.216	1	4000	12000	0.90	4.48
	F208	1	C	29	18	522	5.40	30%	30%	20%						
22	MH70	15	C	34	30	1020	3.76	30%	30%	20%	0.278	1	4000	60000	0.90	14.75
	MH70	5	C	34	30	1020	3.76	30%	30%	20%	0.278	1	4000	20000	0.90	4.92

X1-124

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	MH70	2	R	32	9	288	3.56	30%	30%	20%	0.288	1	4000	8000	0.90	7.22
24	MH70	20	C	38	31	1178	3.51	30%	30%	20%	0.291	1	4000	80000	0.90	17.83
25	MH70	1	C	10	9	90	12.67	30%	30%	20%	0.089	1	4000	4000	0.90	3.57
26	MH70	1	C	11	4	44	20.45	30%	30%	20%	0.089	1	4000	4000	0.90	7.30
27	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.089	1	4000	4000	0.90	5.10
28	MH70	1	C	13	11	143	10.07	30%	30%	20%	0.089	1	4000	4000	0.90	2.25
29	MH70	20	C	36	31	1116	3.60	30%	30%	20%	0.286	1	4000	80000	0.90	18.49
30	MH70	1	C	12	8	96	12.50	30%	30%	20%	0.089	1	4000	4000	0.90	3.35
31	MH70	2	C	8	7	56	16.07	30%	30%	20%	0.089	1	4000	8000	0.90	11.47
32	MH70	2	C	9	6.5	59	15.90	30%	30%	20%	0.089	1	4000	8000	0.90	10.98
33	MH70	1	C	8	7	56	16.07	30%	30%	20%	0.089	1	4000	4000	0.90	5.73

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	4	C	49	11.5	564	6.44	30%	30%	20%	0.294	1	5450	21800	0.94	10.70
	F208	8	B	49	11.5	564	2.68	30%	10%	20%	0.539	2	2650	42400	0.92	37.38
	F208	2	C	49	11.5	564	6.44	30%	30%	20%						
	F208	2	B	49	11.5	564	2.68	30%	10%	20%	0.539	2	2650	10600	0.92	9.34
2	HP70	7	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	38150	0.94	15.23
	F208	8	B	49	19	931	1.83	30%	10%	20%	0.594	2	2650	42400	0.92	24.93
	HP10	1	C	49	19	931	4.38	30%	30%	20%		1	8550			
3	HP70	10	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	54500	0.94	21.76
	F208	8	B	49	19	931	1.83	30%	10%	20%	0.594	2	2650	42400	0.92	24.93
4	HP70	15	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	81750	0.94	32.63
5	HP70	5	C	49	9	441	7.89	30%	30%	20%	0.241	1	5450	27250	0.94	14.01
6	HP70	16	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	87200	0.94	34.81
	HP10	2	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	17100	0.94	6.83
7	HP70	12	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	65400	0.94	26.11
	HP10	6	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	51300	0.94	20.48
8	HP70	15	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	81750	0.94	32.63
9	HP70	7	C	29	19	551	5.23	30%	30%	20%	0.347	1	5450	38150	0.94	22.61
	HP10	2	C	29	19	551	5.23	30%	30%	20%	0.347	1	8550	17100	0.94	10.13
10	HP70	6	C	20	19	380	6.16	30%	30%	20%	0.306	1	5450	32700	0.94	24.78
11	HP50	13	R	164	11	1804	2.43	30%	30%	20%	0.551	1	3600	46800	0.94	13.45
12	HP50	7	R	125	11	1375	2.47	30%	30%	20%	0.547	1	3600	25200	0.94	9.43
13	HP50	4	R	20	11	220	3.52	30%	30%	20%	0.456	1	3600	14400	0.94	28.08
14	HP70	4	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	21800	0.94	24.01
15	HP70	4	C	13	13	169	9.23	30%	30%	20%	0.203	1	5450	21800	0.94	24.64
16	HP70	2	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	10900	0.94	12.00
17	HP70	1	C	14	8	112	11.79	30%	30%	20%	0.178	1	5450	5450	0.94	8.15
18	HP70	6	C	50	5	250	13.20	30%	30%	20%	0.178	1	5450	32700	0.94	21.91
19	HP70	6	C	94	8	752	8.14	30%	30%	20%	0.233	1	5450	32700	0.94	9.53
20	HP70	3	C	74	8	592	8.31	30%	30%	20%	0.229	1	5450	16350	0.94	5.95
21	HP70	3	C	29	18	522	5.40	30%	30%	20%	0.339	1	5450	16350	0.94	9.99
	F208	1	C	29	18	522	5.40	30%	30%	20%						
22	HP70	15	C	34	30	1020	3.76	30%	30%	20%	0.438	1	5450	81750	0.94	33.03
	HP70	5	C	34	30	1020	3.76	30%	30%	20%	0.438	1	5450	27250	0.94	11.01

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	HP50	2	R	32	9	288	3.56	30%	30%	20%	0.453	1	3600	7200	0.94	10.66
24	HP70	20	C	38	31	1178	3.51	30%	30%	20%	0.457	1	5450	109000	0.94	39.79
25	HP70	1	C	10	9	90	12.67	30%	30%	20%	0.138	1	5450	5450	0.94	7.86
26	HP70	1	C	11	4	44	20.45	30%	30%	20%	0.138	1	5450	5450	0.94	16.08
27	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.138	1	5450	5450	0.94	11.23
28	HP70	1	C	13	11	143	10.07	30%	30%	20%	0.138	1	5450	5450	0.94	4.95
29	HP70	20	C	36	31	1116	3.60	30%	30%	20%	0.450	1	5450	109000	0.94	41.35
30	HP70	1	C	12	8	96	12.50	30%	30%	20%	0.138	1	5450	5450	0.94	7.37
31	HP70	2	C	8	7	56	16.07	30%	30%	20%	0.138	1	5450	10900	0.94	25.27
32	HP70	2	C	9	6.5	59	15.90	30%	30%	20%	0.138	1	5450	10900	0.94	24.19
33	HP70	1	C	8	7	56	16.07	30%	30%	20%	0.138	1	5450	5450	0.94	12.64

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	MH70	4	C	49	11.5	564	6.44	30%	30%	20%	0.188	1	4000	16000	0.90	4.82
	F312	8	B	49	11.5	564	2.68	30%	10%	20%	0.539	3	2570	61680	0.92	54.37
	F312	2	C	49	11.5	564	6.44	30%	30%	20%						
	F312	2	B	49	11.5	564	2.68	30%	10%	20%	0.539	3	2570	15420	0.92	13.59
2	MH70	7	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	28000	0.90	6.81
	F312	8	B	49	19	931	1.83	30%	10%	20%	0.594	3	2570	61680	0.92	36.27
	HP10	1	C	49	19	931	4.38	30%	30%	20%		1	8550			
3	MH70	10	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	40000	0.90	9.73
	F312	8	B	49	19	931	1.83	30%	10%	20%	0.594	3	2570	61680	0.92	36.27
4	MH70	15	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	60000	0.90	14.59
5	MH70	5	C	49	9	441	7.89	30%	30%	20%	0.154	1	4000	20000	0.90	6.30
6	MH70	16	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	64000	0.90	15.57
	HP10	2	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	17100	0.94	6.83
7	MH70	12	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	48000	0.90	11.67
	HP10	6	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	51300	0.94	20.48
8	MH70	15	C	49	19	931	4.38	30%	30%	20%	0.251	1	4000	60000	0.90	14.59
9	MH70	7	C	29	19	551	5.23	30%	30%	20%	0.221	1	4000	28000	0.90	10.13
	HP10	2	C	29	19	551	5.23	30%	30%	20%	0.347	1	8550	17100	0.94	10.13
10	MH70	6	C	20	19	380	6.16	30%	30%	20%	0.195	1	4000	24000	0.90	11.11
11	MH70	13	R	164	11	1804	2.43	30%	30%	20%	0.354	1	4000	52000	0.90	9.21
12	MH70	7	R	125	11	1375	2.47	30%	30%	20%	0.351	1	4000	28000	0.90	6.45
13	MH70	4	R	20	11	220	3.52	30%	30%	20%	0.290	1	4000	16000	0.90	19.03
14	MH70	4	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	16000	0.90	10.94
15	MH70	4	C	13	13	169	9.23	30%	30%	20%	0.131	1	4000	16000	0.90	11.19
16	MH70	2	C	14	13	182	8.90	30%	30%	20%	0.138	1	4000	8000	0.90	5.47
17	MH70	1	C	14	8	112	11.79	30%	30%	20%	0.115	1	4000	4000	0.90	3.71
18	MH70	6	C	50	5	250	13.20	30%	30%	20%	0.115	1	4000	24000	0.90	9.96
19	MH70	6	C	94	8	752	8.14	30%	30%	20%	0.150	1	4000	24000	0.90	4.32
20	MH70	3	C	74	8	592	8.31	30%	30%	20%	0.147	1	4000	12000	0.90	2.69
21	MH70	3	C	29	18	522	5.40	30%	30%	20%	0.216	1	4000	12000	0.90	4.48
	F212	1	C	29	18	522	5.40	30%	30%	20%						
22	MH70	15	C	34	30	1020	3.76	30%	30%	20%	0.278	1	4000	60000	0.90	14.75
	MH70	5	C	34	30	1020	3.76	30%	30%	20%	0.278	1	4000	20000	0.90	4.92

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	MH70	2	R	32	9	288	3.56	30%	30%	20%	0.288	1	4000	8000	0.90	7.22
24	MH70	20	C	38	31	1178	3.51	30%	30%	20%	0.291	1	4000	80000	0.90	17.83
25	MH70	1	C	10	9	90	12.67	30%	30%	20%	0.089	1	4000	4000	0.90	3.57
26	MH70	1	C	11	4	44	20.45	30%	30%	20%	0.089	1	4000	4000	0.90	7.30
27	MH70	1	C	9	7	63	15.24	30%	30%	20%	0.089	1	4000	4000	0.90	5.10
28	MH70	1	C	13	11	143	10.07	30%	30%	20%	0.089	1	4000	4000	0.90	2.25
29	MH70	20	C	36	31	1116	3.60	30%	30%	20%	0.286	1	4000	80000	0.90	18.49
30	MH70	1	C	12	8	96	12.50	30%	30%	20%	0.089	1	4000	4000	0.90	3.35
31	MH70	2	C	8	7	56	16.07	30%	30%	20%	0.089	1	4000	8000	0.90	11.47
32	MH70	2	C	9	6.5	59	15.90	30%	30%	20%	0.089	1	4000	8000	0.90	10.98
33	MH70	1	C	8	7	56	16.07	30%	30%	20%	0.089	1	4000	4000	0.90	5.73

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP70	4	C	49	11.5	564	6.44	30%	30%	20%	0.294	1	5450	21800	0.94	10.70
	F312	8	B	49	11.5	564	2.68	30%	10%	20%	0.539	3	2570	61680	0.92	54.37
	F312	2	C	49	11.5	564	6.44	30%	30%	20%						
	F312	2	B	49	11.5	564	2.68	30%	10%	20%	0.539	3	2570	15420	0.92	13.59
2	HP70	7	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	38150	0.94	15.23
	F312	8	B	49	19	931	1.83	30%	10%	20%	0.594	3	2570	61680	0.92	36.27
	HP10	1	C	49	19	931	4.38	30%	30%	20%		1	8550			
3	HP70	10	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	54500	0.94	21.76
	F312	8	B	49	19	931	1.83	30%	10%	20%	0.594	3	2570	61680	0.92	36.27
4	HP70	15	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	81750	0.94	32.63
5	HP70	5	C	49	9	441	7.89	30%	30%	20%	0.241	1	5450	27250	0.94	14.01
6	HP70	16	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	87200	0.94	34.81
	HP10	2	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	17100	0.94	6.83
7	HP70	12	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	65400	0.94	26.11
	HP10	6	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	51300	0.94	20.48
8	HP70	15	C	49	19	931	4.38	30%	30%	20%	0.395	1	5450	81750	0.94	32.63
9	HP70	7	C	29	19	551	5.23	30%	30%	20%	0.347	1	5450	38150	0.94	22.61
	HP10	2	C	29	19	551	5.23	30%	30%	20%	0.347	1	8550	17100	0.94	10.13
10	HP70	6	C	20	19	380	6.16	30%	30%	20%	0.306	1	5450	32700	0.94	24.78
11	HP50	13	R	164	11	1804	2.43	30%	30%	20%	0.551	1	3600	46800	0.94	13.45
12	HP50	7	R	125	11	1375	2.47	30%	30%	20%	0.547	1	3600	25200	0.94	9.43
13	HP50	4	R	20	11	220	3.52	30%	30%	20%	0.456	1	3600	14400	0.94	28.08
14	HP70	4	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	21800	0.94	24.01
15	HP70	4	C	13	13	169	9.23	30%	30%	20%	0.203	1	5450	21800	0.94	24.64
16	HP70	2	C	14	13	182	8.90	30%	30%	20%	0.213	1	5450	10900	0.94	12.00
17	HP70	1	C	14	8	112	11.79	30%	30%	20%	0.178	1	5450	5450	0.94	8.15
18	HP70	6	C	50	5	250	13.20	30%	30%	20%	0.178	1	5450	32700	0.94	21.91
19	HP70	6	C	94	8	752	8.14	30%	30%	20%	0.233	1	5450	32700	0.94	9.53
20	HP70	3	C	74	8	592	8.31	30%	30%	20%	0.229	1	5450	16350	0.94	5.95
21	HP70	3	C	29	18	522	5.40	30%	30%	20%	0.339	1	5450	16350	0.94	9.99
	F212	1	C	29	18	522	5.40	30%	30%	20%						
22	HP70	15	C	34	30	1020	3.76	30%	30%	20%	0.438	1	5450	81750	0.94	33.03
	HP70	5	C	34	30	1020	3.76	30%	30%	20%	0.438	1	5450	27250	0.94	11.01

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	HP50	2	R	32	9	288	3.56	30%	30%	20%	0.453	1	3600	7200	0.94	10.66
24	HP70	20	C	38	31	1178	3.51	30%	30%	20%	0.457	1	5450	109000	0.94	39.79
25	HP70	1	C	10	9	90	12.67	30%	30%	20%	0.138	1	5450	5450	0.94	7.86
26	HP70	1	C	11	4	44	20.45	30%	30%	20%	0.138	1	5450	5450	0.94	16.08
27	HP70	1	C	9	7	63	15.24	30%	30%	20%	0.138	1	5450	5450	0.94	11.23
28	HP70	1	C	13	11	143	10.07	30%	30%	20%	0.138	1	5450	5450	0.94	4.95
29	HP70	20	C	36	31	1116	3.60	30%	30%	20%	0.450	1	5450	109000	0.94	41.35
30	HP70	1	C	12	8	96	12.50	30%	30%	20%	0.138	1	5450	5450	0.94	7.37
31	HP70	2	C	8	7	56	16.07	30%	30%	20%	0.138	1	5450	10900	0.94	25.27
32	HP70	2	C	9	6.5	59	15.90	30%	30%	20%	0.138	1	5450	10900	0.94	24.19
33	HP70	1	C	8	7	56	16.07	30%	30%	20%	0.138	1	5450	5450	0.94	12.64

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
1	HP50	4	C	49	11.5	564	6.44	30%	30%	20%	0.294	1	3600	14400	0.94	7.07
	F208	8	B	49	11.5	564	2.68	30%	10%	20%	0.539	2	2650	42400	0.92	37.38
	F208	2	C	49	11.5	564	6.44	30%	30%	20%						
	F208	2	B	49	11.5	564	2.68	30%	10%	20%	0.539	2	2650	10600	0.92	9.34
2	HP50	7	C	49	19	931	4.38	30%	30%	20%	0.395	1	3600	25200	0.94	10.06
	F208	8	B	49	19	931	1.83	30%	10%	20%	0.594	2	2650	42400	0.92	24.93
	HP10	1	C	49	19	931	4.38	30%	30%	20%		1	8550			
3	HP50	10	C	49	19	931	4.38	30%	30%	20%	0.395	1	3600	36000	0.94	14.37
	F208	8	B	49	19	931	1.83	30%	10%	20%	0.594	2	2650	42400	0.92	24.93
4	HP50	15	C	49	19	931	4.38	30%	30%	20%	0.395	1	3600	54000	0.94	21.56
5	HP50	5	C	49	9	441	7.89	30%	30%	20%	0.241	1	3600	18000	0.94	9.26
6	HP50	16	C	49	19	931	4.38	30%	30%	20%	0.395	1	3600	57600	0.94	22.99
	HP10	2	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	17100	0.94	6.83
7	HP50	12	C	49	19	931	4.38	30%	30%	20%	0.395	1	3600	43200	0.94	17.25
	HP10	6	C	49	19	931	4.38	30%	30%	20%	0.395	1	8550	51300	0.94	20.48
8	HP50	15	C	49	19	931	4.38	30%	30%	20%	0.395	1	3600	54000	0.94	21.56
9	HP50	7	C	29	19	551	5.23	30%	30%	20%	0.347	1	3600	25200	0.94	14.93
	HP10	2	C	29	19	551	5.23	30%	30%	20%	0.347	1	8550	17100	0.94	10.13
10	HP50	6	C	20	19	380	6.16	30%	30%	20%	0.306	1	3600	21600	0.94	16.37
11	HP50	13	R	164	11	1804	2.43	30%	30%	20%	0.551	1	3600	46800	0.94	13.45
12	HP50	7	R	125	11	1375	2.47	30%	30%	20%	0.547	1	3600	25200	0.94	9.43
13	HP50	4	R	20	11	220	3.52	30%	30%	20%	0.456	1	3600	14400	0.94	28.08
14	HP50	4	C	14	13	182	8.90	30%	30%	20%	0.213	1	3600	14400	0.94	15.86
15	HP50	4	C	13	13	169	9.23	30%	30%	20%	0.203	1	3600	14400	0.94	16.27
16	HP50	2	C	14	13	182	8.90	30%	30%	20%	0.213	1	3600	7200	0.94	7.93
17	HP50	1	C	14	8	112	11.79	30%	30%	20%	0.178	1	3600	3600	0.94	5.38
18	HP50	6	C	50	5	250	13.20	30%	30%	20%	0.178	1	3600	21600	0.94	14.47
19	HP50	6	C	94	8	752	8.14	30%	30%	20%	0.233	1	3600	21600	0.94	6.30
20	HP50	3	C	74	8	592	8.31	30%	30%	20%	0.229	1	3600	10800	0.94	3.93
21	HP50	3	C	29	18	522	5.40	30%	30%	20%	0.339	1	3600	10800	0.94	6.60
	F208	1	C	29	18	522	5.40	30%	30%	20%						
22	HP50	15	C	34	30	1020	3.76	30%	30%	20%	0.438	1	3600	54000	0.94	21.82
	HP50	5	C	34	30	1020	3.76	30%	30%	20%	0.438	1	3600	18000	0.94	7.27

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No	Type	Qty	Loc	Room Data				Reflectance			Fixture Data					F.C.
				Length (feet)	Width (feet)	Area (sf)	R.C.R.	%c	%w	%fl	C.U.	Lamps/ Fixture	Lumens/ Lamp	Total Lumens	L.L.F.	
23	HP50	2	R	32	9	288	3.56	30%	30%	20%	0.453	1	3600	7200	0.94	10.66
24	HP50	20	C	38	31	1178	3.51	30%	30%	20%	0.457	1	3600	72000	0.94	26.28
25	HP50	1	C	10	9	90	12.67	30%	30%	20%	0.138	1	3600	3600	0.94	5.19
26	HP50	1	C	11	4	44	20.45	30%	30%	20%	0.138	1	3600	3600	0.94	10.62
27	HP50	1	C	9	7	63	15.24	30%	30%	20%	0.138	1	3600	3600	0.94	7.42
28	HP50	1	C	13	11	143	10.07	30%	30%	20%	0.138	1	3600	3600	0.94	3.27
29	HP50	20	C	36	31	1116	3.60	30%	30%	20%	0.450	1	3600	72000	0.94	27.32
30	HP50	1	C	12	8	96	12.50	30%	30%	20%	0.138	1	3600	3600	0.94	4.87
31	HP50	2	C	8	7	56	16.07	30%	30%	20%	0.138	1	3600	7200	0.94	16.69
32	HP50	2	C	9	6.5	59	15.90	30%	30%	20%	0.138	1	3600	7200	0.94	15.98
33	HP50	1	C	8	7	56	16.07	30%	30%	20%	0.138	1	3600	3600	0.94	8.35

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
1	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	I200	7	B	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
	F312	3	C	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
	F312	3	B	2496	3	14000	0.5	$14	0.1	$5	1.0	$19	$38
2	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
	I200	6	B	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
	HP10	2	C	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38
3	I200	14	C	2496	1	700	49.9	$498	0.0	$0	4.7	$73	$571
	I200	10	B	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
4	I200	21	C	2496	1	700	74.9	$747	0.0	$0	7.0	$110	$857
5	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
6	I200	23	C	2496	1	700	82.0	$818	0.0	$0	7.7	$121	$938
	HP10	3	C	2496	1	16800	0.4	$19	0.1	$12	1.0	$26	$57
7	I200	17	C	2496	1	700	60.6	$604	0.0	$0	5.7	$89	$693
	HP10	9	C	2496	1	16800	1.3	$58	0.2	$35	3.0	$78	$171
8	I200	21	C	2496	1	700	74.9	$747	0.0	$0	7.0	$110	$857
9	I200	10	C	2496	1	700	35.7	$356	0.0	$0	3.3	$52	$408
	HP10	3	C	2496	1	16800	0.4	$19	0.1	$12	1.0	$26	$57
10	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
11	I200	13	R	2496	1	700	46.4	$462	0.0	$0	4.3	$68	$530
12	I200	7	R	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
13	I200	4	R	2496	1	700	14.3	$142	0.0	$0	1.3	$21	$163
14	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
15	I200	6	C	2496	1	700	21.4	$213	0.0	$0	2.0	$31	$245
16	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
17	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
18	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
19	I200	9	C	2496	1	700	32.1	$320	0.0	$0	3.0	$47	$367
20	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
21	I200	5	C	2496	1	700	17.8	$178	0.0	$0	1.7	$26	$204
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11
22	I200	21	C	2496	1	700	74.9	$747	0.0	$0	7.0	$110	$857
	I200	7	C	2496	1	700	25.0	$249	0.0	$0	2.3	$37	$286
Page Total		282						$9,312		$78		$1,544	$10,934

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 1/Baseline

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost
23	I200	2	R	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
24	I200	28	C	2496	1	700	99.8	$995	0.0	$0	9.3	$147	$1,142
25	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
26	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
27	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
28	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
29	I200	28	C	2496	1	700	99.8	$995	0.0	$0	9.3	$147	$1,142
30	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
31	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
32	I200	3	C	2496	1	700	10.7	$107	0.0	$0	1.0	$16	$122
33	I200	2	C	2496	1	700	7.1	$71	0.0	$0	0.7	$10	$82
Page Total		76						$2,702		$0		$398	$3,100
Building Total		358						$12,014		$78		$1,942	$14,034

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$202
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
2	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$161
	HP10	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$19
3	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$324
4	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
5	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
6	MH70	16	C	2496	1	5250	7.6	$493	0.3	$58	5.3	$140	$690	$248
	HP10	2	C	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$19
7	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
	HP10	6	C	2496	1	16800	0.9	$39	0.1	$23	2.0	$52	$114	$57
8	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
9	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	HP10	2	C	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$19
10	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
11	MH70	13	R	2496	1	5250	6.2	$401	0.3	$47	4.3	$113	$561	($31)
12	MH70	7	R	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	($17)
13	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
14	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
15	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
16	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
17	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
18	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
19	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
20	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
21	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
22	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
Page Total		210						$5,385		$702		$1,761	$7,847	$3,086

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11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 2

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
23	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
24	MH70	20	C	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	$279
25	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
26	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
27	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
28	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
29	MH70	20	C	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	$279
30	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
31	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
32	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
33	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Page Total		52						$1,603		$187		$453	$2,244	$856
Building Total		262						$6,988		$889		$2,214	$10,091	$3,943

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$202
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
2	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$161
	HP10	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$19
3	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$324
4	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
5	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
6	HP70	16	C	2496	1	16800	2.4	$94	0.3	$60	5.3	$140	$293	$645
	HP10	2	C	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$19
7	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
	HP10	6	C	2496	1	16800	0.9	$39	0.1	$23	2.0	$52	$114	$57
8	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
9	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	HP10	2	C	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$19
10	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
11	HP50	13	R	2496	1	16800	1.9	$84	0.3	$47	4.3	$113	$244	$286
12	HP50	7	R	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$154
13	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
14	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
15	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
16	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
17	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
18	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
19	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
20	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
21	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
22	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
Page Total		210						$1,158		$719		$1,761	$3,637	$7,296

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11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 3

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
23	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
24	HP70	20	C	2496	1	16800	3.0	$118	0.4	$74	6.7	$174	$366	$776
25	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
26	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
27	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
28	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
29	HP70	20	C	2496	1	16800	3.0	$118	0.4	$74	6.7	$174	$366	$776
30	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
31	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
32	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
33	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
Page Total		52						$307		$193		$453	$954	$2,146
Building Total		262						$1,465		$912		$2,214	$4,591	$9,443

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
	F312	8	B	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$185
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
2	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	F312	8	B	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$144
	HP10	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$19
3	MH70	10	C	2496	1	5250	4.8	$308	0.2	$36	3.3	$87	$432	$140
	F312	8	B	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$307
4	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
5	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
6	MH70	16	C	2496	1	5250	7.6	$493	0.3	$58	5.3	$140	$690	$248
	HP10	2	C	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$19
7	MH70	12	C	2496	1	5250	5.7	$370	0.2	$43	4.0	$105	$518	$176
	HP10	6	C	2496	1	16800	0.9	$39	0.1	$23	2.0	$52	$114	$57
8	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
9	MH70	7	C	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	$106
	HP10	2	C	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$19
10	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
11	MH70	13	R	2496	1	5250	6.2	$401	0.3	$47	4.3	$113	$561	($31)
12	MH70	7	R	2496	1	5250	3.3	$216	0.1	$25	2.3	$61	$302	($17)
13	MH70	4	R	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	($9)
14	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
15	MH70	4	C	2496	1	5250	1.9	$123	0.1	$14	1.3	$35	$173	$72
16	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
17	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
18	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
19	MH70	6	C	2496	1	5250	2.9	$185	0.1	$22	2.0	$52	$259	$108
20	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
21	MH70	3	C	2496	1	5250	1.4	$92	0.1	$11	1.0	$26	$129	$74
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
22	MH70	15	C	2496	1	5250	7.1	$462	0.3	$54	5.0	$131	$647	$209
	MH70	5	C	2496	1	5250	2.4	$154	0.1	$18	1.7	$44	$216	$70
Page Total		210						$5,443		$706		$1,761	$7,909	$3,025

X1-14C

11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 4

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
23	MH70	2	R	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	($5)
24	MH70	20	C	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	$279
25	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
26	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
27	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
28	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
29	MH70	20	C	2496	1	5250	9.5	$617	0.4	$72	6.7	$174	$863	$279
30	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
31	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
32	MH70	2	C	2496	1	5250	1.0	$62	0.0	$7	0.7	$17	$86	$36
33	MH70	1	C	2496	1	5250	0.5	$31	0.0	$4	0.3	$9	$43	$38
Page Total		52						$1,603		$187		$453	$2,244	$856
Building Total		262						$7,046		$893		$2,214	$10,153	$3,881

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
	F312	8	B	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$185
	F312	2	C	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
	F312	2	B	2496	3	14000	0.4	$9	0.0	$4	0.7	$13	$25	$13
2	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	F312	8	B	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$144
	HP10	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$19
3	HP70	10	C	2496	1	16800	1.5	$59	0.2	$37	3.3	$87	$183	$388
	F312	8	B	2496	3	14000	1.4	$36	0.2	$14	2.7	$50	$101	$307
4	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
5	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
6	HP70	16	C	2496	1	16800	2.4	$94	0.3	$60	5.3	$140	$293	$645
	HP10	2	C	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$19
7	HP70	12	C	2496	1	16800	1.8	$71	0.2	$45	4.0	$105	$220	$474
	HP10	6	C	2496	1	16800	0.9	$39	0.1	$23	2.0	$52	$114	$57
8	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
9	HP70	7	C	2496	1	16800	1.0	$41	0.1	$26	2.3	$61	$128	$280
	HP10	2	C	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$19
10	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
11	HP50	13	R	2496	1	16800	1.9	$84	0.3	$47	4.3	$113	$244	$286
12	HP50	7	R	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$154
13	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
14	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
15	HP70	4	C	2496	1	16800	0.6	$24	0.1	$15	1.3	$35	$73	$171
16	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
17	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
18	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
19	HP70	6	C	2496	1	16800	0.9	$35	0.1	$22	2.0	$52	$110	$257
20	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
21	HP70	3	C	2496	1	16800	0.4	$18	0.1	$11	1.0	$26	$55	$149
	F212	1	C	2496	2	14000	0.2	$3	0.0	$1	0.3	$6	$11	$0
22	HP70	15	C	2496	1	16800	2.2	$88	0.3	$56	5.0	$131	$275	$582
	HP70	5	C	2496	1	16800	0.7	$29	0.1	$19	1.7	$44	$92	$194
Page Total		210						$1,215		$724		$1,761	$3,699	$7,235

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Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 5

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
23	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
24	HP70	20	C	2496	1	16800	3.0	$118	0.4	$74	6.7	$174	$366	$776
25	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
26	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
27	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
28	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
29	HP70	20	C	2496	1	16800	3.0	$118	0.4	$74	6.7	$174	$366	$776
30	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
31	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
32	HP70	2	C	2496	1	16800	0.3	$12	0.0	$7	0.7	$17	$37	$86
33	HP70	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$18	$63
Page Total		52						$307		$193		$453	$954	$2,146
Building Total		262						$1,522		$917		$2,214	$4,653	$9,381

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11/10/94

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
1	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$202
	F208	2	C	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
	F208	2	B	2496	2	14000	0.4	$5	0.0	$3	0.7	$13	$21	$17
2	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$161
	HP10	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$19
3	HP50	10	C	2496	1	16800	1.5	$65	0.2	$36	3.3	$87	$188	$383
	F208	8	B	2496	2	14000	1.4	$20	0.2	$13	2.7	$50	$83	$324
4	HP50	15	C	2496	1	16800	2.2	$97	0.3	$54	5.0	$131	$282	$575
5	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
6	HP50	16	C	2496	1	16800	2.4	$103	0.3	$58	5.3	$140	$300	$638
	HP10	2	C	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$19
7	HP50	12	C	2496	1	16800	1.8	$77	0.2	$43	4.0	$105	$225	$468
	HP10	6	C	2496	1	16800	0.9	$39	0.1	$23	2.0	$52	$114	$57
8	HP50	15	C	2496	1	16800	2.2	$97	0.3	$54	5.0	$131	$282	$575
9	HP50	7	C	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$276
	HP10	2	C	2496	1	16800	0.3	$13	0.0	$8	0.7	$17	$38	$19
10	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
11	HP50	13	R	2496	1	16800	1.9	$84	0.3	$47	4.3	$113	$244	$286
12	HP50	7	R	2496	1	16800	1.0	$45	0.1	$25	2.3	$61	$131	$154
13	HP50	4	R	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$88
14	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
15	HP50	4	C	2496	1	16800	0.6	$26	0.1	$14	1.3	$35	$75	$170
16	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
17	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
18	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
19	HP50	6	C	2496	1	16800	0.9	$39	0.1	$22	2.0	$52	$113	$254
20	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
21	HP50	3	C	2496	1	16800	0.4	$19	0.1	$11	1.0	$26	$56	$148
	F208	1	C	2496	2	14000	0.2	$3	0.0	$2	0.3	$6	$10	$1
22	HP50	15	C	2496	1	16800	2.2	$97	0.3	$54	5.0	$131	$282	$575
	HP50	5	C	2496	1	16800	0.7	$32	0.1	$18	1.7	$44	$94	$192
Page Total		210						$1,241		$702		$1,761	$3,703	$7,231

Milan Ammunition Plant Limited Energy Study
Manufacturing/Assembly Line X
Building X-41
Alt 6

Loc
B - Belt Lighting
C - Building Lighting
R - Ramp Lighting
L - Loading Lighting
* - Non-Explosion Proof Fixtures

Room No.	Type	Qty	Loc	Operating Hrs/Year	Lamps per Fixture	Lamp Life (Hours	Yearly Relamping Count	Yearly Relamping Cost	Yearly Reballast Count	Yearly Reballast Cost	Yearly Cleaning Count	Yearly Cleaning Cost	Total Maintenance Cost	Maintenance Savings (Baseline)
23	HP50	2	R	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$44
24	HP50	20	C	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$767
25	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
26	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
27	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
28	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
29	HP50	20	C	2496	1	16800	3.0	$129	0.4	$72	6.7	$174	$375	$767
30	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
31	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
32	HP50	2	C	2496	1	16800	0.3	$13	0.0	$7	0.7	$17	$38	$85
33	HP50	1	C	2496	1	16800	0.1	$6	0.0	$4	0.3	$9	$19	$63
Page Total		52						$336		$187		$453	$976	$2,124
Building Total		262						$1,577		$889		$2,214	$4,680	$9,354

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